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COMPUTERWORLD

Security woes dull OLE luster

Object embedding opens hacker door

By Michael Vizard

■ Information systems shops may soon find themselves exposed to security shortcomings as they move to adopt the coming generation of object technology in their networked PC applications.

Objects are intended to provide dramatically improved integration between applications. But deploying technologies such as Microsoft Corp.'s Object Linking and Embedding interface may inadvertently create a back door through which malicious individuals can enter to embed destructive commands, viruses and worms in any number of applications that are distributed via electronic mail or network protocols.

"IS managers should be forewarned that this can be done, but only one in 10,000 users is conversational enough in OLE and electronic mail or networks to accomplish it," said Joel Diamond, technology director at the Windows User Group Network in Media, Pa.

However, the potential damage

OLE, *page 8*

Novell to fill directory gaps

Planned additions said to bring NDS up to par with Banyan's StreetTalk

By Elisabeth Horwitt

Novell, Inc. plans next spring to fill in many of the more prominent missing pieces in its NetWare Directory Services, a core piece of NetWare 4.01 that forms the foundation for Novell's enterprise networking services strategy.

Planned introductions include utilities for administering legacy NetWare v3.11 directories from NDS and tools to facilitate altering NDS directory structures. Also in the works is initial integration of the NDS directory with Novell's electronic-mail and third-party SQL

database services, a Novell spokesman said last week.

"Novell is finally doing something to help people migrate between 3.11 and 4.01," said David Strom, president of David Strom, Inc., a Port Washington, N.Y., consultancy.

Ready to use

Network administrators who have balked at the complexity of NDS will make good use of the promised "tools for manipulating, combining and reshaping [NDS] directories," Strom said.

Several customers have cited those missing capabilities, most notably the lack of NetWare v3.11 support, as their reasons for holding off on NetWare 4.01 implementation [CW, July 26].

"It is also essential that Novell continue to extend NDS across" all of its major network services so that the global directory "becomes the center of the [NetWare] universe, just like StreetTalk is for Vines," Strom said.

However, while Banyan Systems, Inc. archi-

Novell, *page 12*

Chip powers up PowerPC

By James Daly and Ed Scannell

Kaleida Labs, Inc., Motorola, Inc. and Scientific-Atlanta, Inc. last week announced a powerful graphics controller designed to provide splashy multimedia services for the home. And if Kaleida has its way, business use won't be far behind.

Officials from the three companies positioned the Malibu chip for use with embedded PowerPC-based TV-top boxes. But Motorola and Kaleida also plan to aggressively pursue deals with manufacturers of PowerPC systems — including IBM — geared toward the corporate world, sources close to both companies said.

Karen A. Ashbaugh, manager of

Chip, *page 16*

PowerPC-based systems *may be more attractive with the addition of the Malibu chip*

Amex extending credit for parallel processing plans

By Gary H. Anthes

Saying that parallel processing will give it a competitive advantage, American Express Co. is increasingly turning to high-performance parallel computing for information processing and decision support.

However, the company said the technology must mature considerably before it moves mission-critical, on-line transaction processing applications off its mainframes. In fact, an Amex official said he expects such key applications will remain on conventional mainframes for at least five years.

Meanwhile, Amex is pushing forward with the spadework necessary to make enterprisewide adoption of parallel processing a reality.

"Parallel processing technology promises to dramatically improve

Amex, *page 14*

IS budget: **$1.1B**

IS budget as percentage of revenue: **4%**

Processor market value: **$800M**

Total PCs and terminals: **115,000**

Source: 1993 *Computerworld* Premier 100

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CIOs, such as former Unum insurance chief John Alexander, stand by their use of foreign contractors, citing high-quality code and up to 50% cost savings. **See story page 123.**

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SPECIAL REPORT

THE STATE OF OPEN SYSTEMS '93

If vendors can't provide better interoperability than they have so far, users may opt for semi-open systems such as Windows NT. For exclusive results of X/Open's latest worldwide survey, see the special *State of Open Systems* supplement that begins on page 87.

THE SHIFT IS ON

Corporations around the world say they plan to nearly double spending on open systems hardware and software over the next three years

(PERCENT OF IS BUDGET)

1993	1995
28%	50%

SOURCE: X/OPEN COM SURVEY OF 700 IS MANAGERS

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Table of Contents

December 6, 1993

NEWS

■ **HP** moves to **"post-RISC" architecture**. *Page 4*

■ **Sun Microsystems taps NetLabs** for the core of its distributed network management framework. *Page 4*

■ **Microsoft**'s agreement with **Digital** brings distributed OLE and Cairo one step closer. *Page 6*

■ **Digital customers** will lob hard questions about strategy at **DECUS** this week. *Page 7*

■ **Sallie Mae** will invest $55 million in imaging and work-flow technology to streamline its loan process. *Page 8*

■ **IBM** marks a tough first year in the chaotic **client/server market**. *Page 10*

■ For most, the **Distributed Computing Environment** remains a distant ideal. *Page 12*

■ A business/university alliance creates a **cable-based interactive multimedia network**. *Page 16*

■ **Lotus** comes on strong in the PC application **suite market**. *Page 20*

■ **WordPerfect** becomes latest vendor to offer **wireless E-mail**. *Page 21*

■ The **Brady bill** will require construction of a national system for instant background checks. *Page 24*

■ **RISC-based Macintoshes** could lure Windows users. *Page 28*

■ Discount broker **Charles Schwab** activates one cell of a planned nationwide network based on DCE. *Page 28*

DESKTOP COMPUTING

■ **Great Plains** takes its PC accounting know-how into client/server. *Page 39*

WORKGROUP COMPUTING

■ **Digital** will add support in 1994 for Microsoft Mail and CC:Mail front ends to LinkWorks. *Page 51*

ENTERPRISE NETWORKING

■ **Sun Life of Canada** balances downsizing and upsizing. *Page 61*

LARGE SYSTEMS

■ **Amdahl** users approve moves toward smaller and more open systems but make no long-term commitments. *Page 67*

■ **Prudential Securities** builds new data center to consolidate functions and house new backup facilities. *Page 67*

APPLICATION DEVELOPMENT

■ **Software reuse** is a lot of work, but it can pay big dividends. *Page 73*

MANAGEMENT

■ CIOs love to hate their **consultants**, but sometimes there's cause. *Page 79*

Stella Johnson

ENTERPRISE NETWORKING

■ **John Kruk of Sun Life** didn't have the option of redesigning the network from scratch. He had to work around the existing structure. *Page 61*

OPEN SYSTEMS SUPPLEMENT

■ What drives users craziest about **"open systems"**? Incompatible versions of products, the high costs of conversion and too many competing standards, according to a new X/Open global survey. *Page 91*

IN DEPTH

■ Interest in **foreign programmers**, here or offshore, is on the rise. *Page 123*

CAREERS

■ Just made **WAN administrator**? Expect a rough first six months. *Page 129*

■ Yes, **mainframe operators** *can* make their way in a multiplatform world. *Page 131*

MARKETPLACE

■ The downside of **docking stations**. *Page 137*

COMPUTER INDUSTRY

■ **Dell** looks to **portables** for renewal. *Page 145*

COMMENTARY

■ The new link between **Sun** and **Next** is a response to the growing demand for products that are both easy to use and extremely sophisticated, says **Charles Babcock**. *Page 6*

■ **Open systems**, in the purist sense, is dead, writes **Bill Laberis**. Pragmatic customers are creating their own pragmatic version. *Page 32*

■ **Novell certification** is an expensive exercise that proves little, writes **Eli Hertz**. *Page 33*

■ **Enterprisewide LAN E-mail** is still a long, hard way off, says **Patricia Seybold**. *Page 33*

■ **Lost on the Internet?** **Mary Cronin** provides some shortcuts to important business data. *Page 63*

Company Index ..... *Page 143*

Editorial/Letters to the editor ..... *Page 32*

Friday Stock Ticker ..... *Page 144*

Executive Briefing

Parallel processing — the new frontier. The race is on in the financial services field to claim the competitive edge that this technology yields.

American Express is aggressively experimenting with massively parallel processing but worries that it may already have fallen behind competitors such as **Citicorp, AT&T and Banc One**. An internal Amex report on the technology highlights its ability to offer targeted products and services to customers in near-real time and talks about its potential to "open up many marketing opportunities that are now unthinkable." **Boulders on the path:** Lack of software development and systems management tools; inadequate reliability for commercial transaction processing; and a drastic shortage of people who understand parallel processing technology. *Page 1*

Mixing and matching. It takes a combination of several tool sets to manage a distributed system, according to Jim White, vice president of technical planning at **Charles Schwab**. That's especially true since the company is moving toward a nationwide network of distributed computing resources based on **OSF's DCE**, for which key pieces are still missing. Schwab has opted for **Sun's operating system** in place of OSF/1 and **Tivoli Systems' Time Management Environment** in place of the OSF's DME framework. *Page 28*

"We decided to pay and just get the hell out."

Jim Masey at Reynolds Metals Co. on how to end a bad consultant relationship. More war stories, page 79.

War stories. Scratch an IS executive and you'll find a person itching to tell you about a horrific experience with a consultant. What's particularly scary is that the **consultants who figure as villains** in these tales are not usually fly-by-nights. Jim Masey *(at right)* ran into trouble with a division of a firm he'd worked with successfully in the past. **Michael Simmons**, who spoke with us just before his departure from Bank of Boston, offered the harshest assessment of experts-for-hire. "My definition of 'expert?' " he said. " 'X' is an unknown quantity and 'spurt' is a drip under pressure." *Page 79*

Gold you can manufacture: Consultant and research analyst **Carma McClure** estimates that 40% to 60% of new application code could potentially come from libraries of reusable components. And the **Pentagon** figures it could save $300 million if it could just increase its current level of software reuse by 1%. Interested? Well, here's a tip. Be systematic and **develop software with reuse in mind**. Experts say the most common mistake organizations make is to think about reuse only when they're in the middle of a project. *Page 73*

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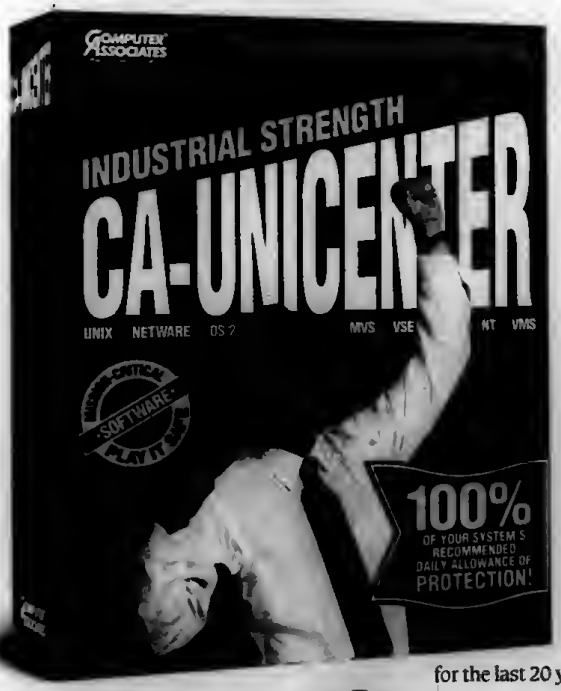

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Network management

SunNet Manager gets distributed

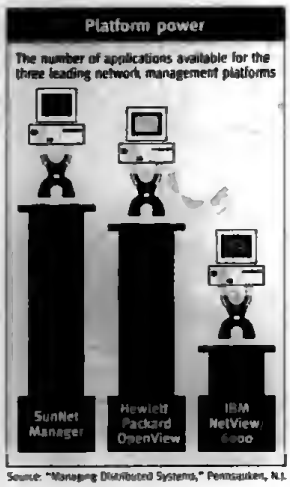
By Lynda Radosevich

Network managers should see the first distributed object-oriented network management platform from a leading vendor by the middle of next year.

SunConnect, a division of Sun Microsystems, Inc. in Mountain View, Calif., will announce this week that it is licensing distributed object-oriented technology from NetLabs, Inc. to be included in the next version of SunNet Manager, according to analysts briefed by both companies.

The distributed technology is structured to address large network management issues such as traffic overload at central consoles, duplicate and unsynchronized databases and users' inability to manage from any point on the network. The object-oriented aspect should help hide the complexity of underlying network structures from corporate or third-party developers.

"Distributed management will be good, but I have to see the real thing before I can get excited about it," said John Dubiel, manager of planning and technology at Boston Edison Co. and a SunNet Manager user.



Source: "Managing Distributed Systems," Pennsauken, N.J.

SunConnect will obtain the technology from NetLabs' Dimons 3G network management platform (formerly called OverLord) and the related application programming interfaces, neither of which will ship this year. A NetLabs spokesman said a Dimons 3G development kit for corporate and third-party developers will ship this month, and the software itself will ship in the first quarter of next year.

NetLabs is roughly nine months ahead of other vendors in the development of distributed object-oriented network management, according to James Herman, president of Northeast Consulting Resources, Inc. in Boston. The deal, therefore, would allow SunConnect to vault over its main rivals, Hewlett-Packard Co. and IBM, Herman said.

Today, IBM is expected to restate its distributed object-oriented network management plans. Analysts said they anticipate IBM will say it has elements in place and speculated that it would offer a piecemeal solution.

Howdy, partner

NetLabs' technology has garnered at least one other partner. In April, NCR Corp. picked NetLabs' technology for use in its StarSentry network management line. StarSentry is used by some large companies but lacks the third-party support needed to make it a main player in the market, according to an NCR spokesman.

Playing catch-up

While the deal would enable SunConnect to address the widely held perception that its technology is falling behind HP and IBM, it is not clear whether the NetLabs version of the distributed technology is robust enough and easy enough to use. That is because NetLabs is not following the same path as the Open Software Foundation (OSF), an industry group that first identified the need for distributed object-oriented network management.

The OSF chose to use the Open Management Group's Common Object Request Broker Architecture specifications, which are general object guidelines. NetLabs is instead using the International Standards Organization's object guidelines, which are specific to network management.

"That means that when you come into the [SunNet Manager/NetLabs] environment as an expert object programmer, you won't know how to program in it," Herman said.

While analysts and users generally applaud Sun's move to object-oriented distributed network management, the technology is not without its downside.

"Instead of having one central management center and a few people with keys, the information is scattered around, so how do you securely delegate tasks?" asked Jill Huntington-Lee, principal at Brandywine Network Associates in Cinnaminson, N.J.

Also key to the success of the new SunConnect/NetLabs platform is the support of third-party developers, which has not yet been established, said Charles Robbins, a director at Aberdeen Group in Boston.

However, Tony Helies, president of Concord Communications in Marlboro, Mass., said SunConnect's upcoming object-oriented system should make it more efficient for his company to write its network monitoring applications to that platform. His firm will develop its products for the upcoming object-oriented SunNet Manager, as well as for whatever system HP and IBM develop, he said.

HP's plan for 'post-RISC' raises migration concerns

By Mark Halper

Hewlett-Packard Co., which pioneered the move to commercial RISC in the mid-1980s, last week startled the industry by sketching out plans for a next-generation, "post-RISC" architecture that promises quantum performance leaps—but also raises compatibility questions.

No sooner had Joel Birnbaum, senior vice president and head of research, outlined HP's plans for a 64-bit billion instructions per second chip that uses Very Long Instruction Word (VLIW) technology than users and analysts raised migration concerns.

"Is there a compatibility issue going forward? Is there a price advantage?" asked Craig Suitan, an analyst at Montgomery Securities in San Francisco.

"I think they need to make some sort of public statement that would reassure not only their customers, but their partners as well, about the compatibility question," said Sam Ellis, associate vice president of information services at Portland Community College in Portland, Ore. "They shouldn't leave any lingering doubt about what 'post-RISC' means."

Anticipating such concerns, Birnbaum, who provided a glimpse of VLIW during a corporate year-end meeting with analysts, told his audience that the technology will provide an easy migration path from HP's current superscalar, 32-bit Precision Architecture-RISC.

"We can provide a seamless migration from PA-RISC and perhaps other architectures," Birnbaum said, according to the text of his prepared remarks obtained by *Computerworld*.

Birnbaum did not provide a time frame for VLIW, but users and analysts said they expect HP to make it available within two years.

Learning from the past

Users and analysts pointed out that HP probably learned a few lessons from its rocky migration in the late 1980s, when it moved users from its "classic" architecture to PA-RISC, then code-named Spectrum. The transition was marred by software incompatibilities as users moved from the classic machines to the PA-RISC models, Ellis said.

Ellis said HP outlined a next-generation architecture at a seminar in France last summer that would move from PA-RISC's CMOS fabric to a Bi-CMOS fabric and portended a huge order-of-magnitude performance improvement.

"It's clear they are making some significant changes in their microprocessor architecture and that they have something that's very significant," Ellis said.

Double the performance

Birnbaum could not be reached to elaborate, but in his prepared remarks he stated that VLIW would permit between 4 and 20 instructions per cycle. "We expect performance to be as significant of an improvement over the current generation as RISC was over its predecessor," he stated. He said raw performance ratings could hit "several billions of instructions per second."

Birnbaum also explained in his text that while superscalar and VLIW both permit more than one execution per CPU cycle, VLIW permits software to schedule these executions in parallel. Superscalar designs schedule multiple executions in hardware, "which increases the complexity and which will in the next few years reach the point of diminishing returns," his statement said.

Eric Fisher, principal at Fisher Systems Consulting in Groton, Mass., pointed out that the key to compatibility between PA-RISC and VLIW will be the development of compilers to allow software written for PA-RISC to take full advantage of VLIW.

He also noted that HP's VLIW will probably exploit microkernel operating system design and will permit HP to build one machine that would accommodate both its Unix and its MPE operating systems—and perhaps others.

David Wu, an analyst at S. G. Warburg & Co. in New York, observed, "Whether it's called CISC or RISC or VLIW, I don't care. All I want to know is, how fast does it run my applications, and how much does it cost me?"

Corrections

An item on page 101 of the Open Systems Supplement says the Open Systems' Foundation and Unix International, Inc. are expected to soon merge. After deadline, it was learned that Unix International plans to close its doors by year's end (see item page 8).

A chart concerning availability of modules offered by different data center automation vendors in The CW Guide to Mainframes in the Nov. 29 issue could be misinterpreted. Computer Associates International, Inc. does indeed offer a report distribution module. Information was not available on whether Candle Corp. offers a data balancing module.

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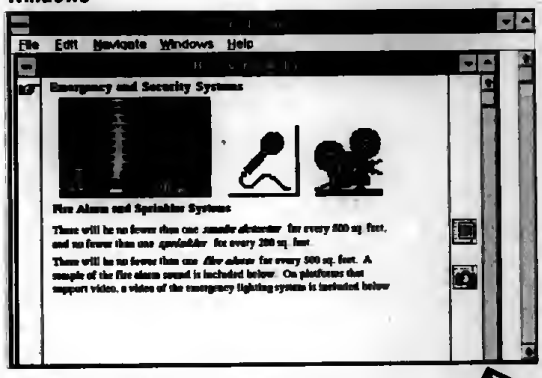

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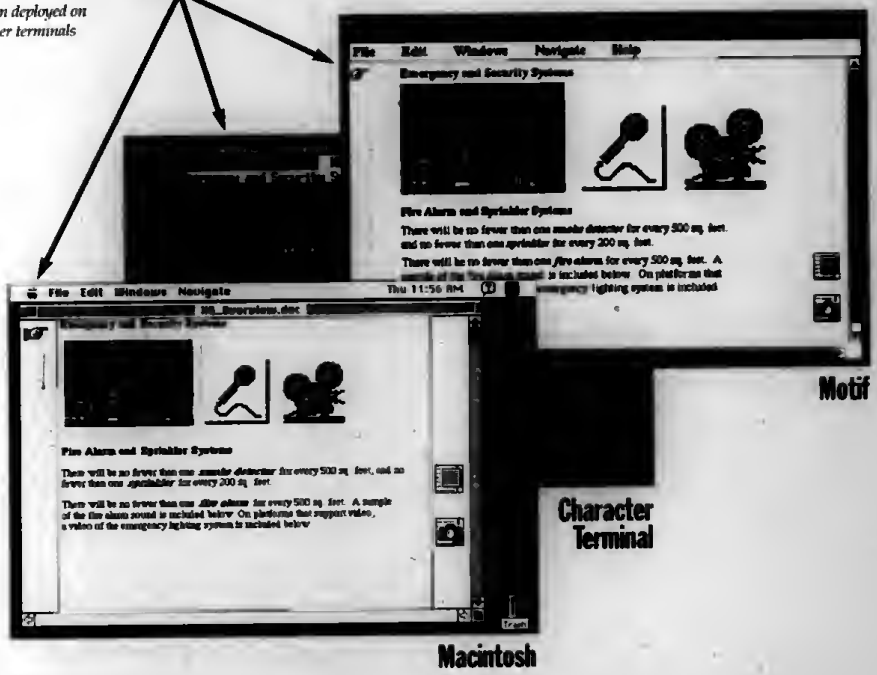

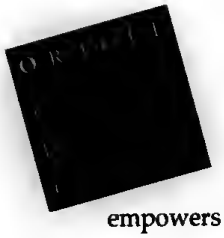

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Objective: Have it both ways

The linkup of Sun Microsystems and Next Computer is the latest demonstration of how computing is attempting to move in two seemingly contradictory directions simultaneously.

On the one hand, computer users aspire to employ more complex data in more sophisticated systems to better reflect their business tasks. On the other hand, they want to work with systems that are easier to maintain and easier to use.

This demand for greater simplicity sitting atop higher and higher levels of abstraction is the major competitive force driving the industry today, and companies as divergent as IBM, Sun, Microsoft, Apple and Hewlett-Packard are scrambling to meet it.

To do so, Sun officials have been forced to set aside old differences with what they once viewed as a presumptious and preposterous competitor and link up with Steve Jobs' outfit. Next's hardware proved to be no threat, but it did field a first-class object-oriented development environment in NextStep. From an early date, Next tended to compare NextStep with Sun's object-oriented offerings, to Next's advantage.

But these differences are no longer relevant in a rapidly changing climate. Sun is not as competitive as it used to be on the hardware front, and it faces additional challenges in software. Sun offers a good assortment of tools for traditional software development, but delivering complicated systems under an easy-to-use veneer is a big challenge. With NextStep, it can give its customer base a way to move quickly into next-generation systems.

Sun's agreement with Next is indicative of the growing demand for sophistication wrapped in simplicity.

Charles Babcock

By agreeing to invest $10 million in Next, Sun will get to incorporate NextStep's object-oriented capabilities into its Solaris operating system. In particular Sun will be able to offer the extensive object class libraries of the NextStep system, something that would take Sun years and millions of dollars to develop on its own.

Moving toward object-oriented systems is a genuinely different way of doing things — so different that we have few business examples of successful implementations. The object-oriented approach is one of the few ways to deal with different kinds of complex data — not only voice, video and image but also complicated entities and their relationships — building business models that come closer to reflecting the rules and practices of the business.

NextStep is not the only means of moving toward systems based on objects. Microsoft has moved rapidly to put object capabilities into the hands of its users through the release of Object Linking and Embedding Version 2.0. The Taligent project from Apple/IBM is likely to match or improve on NextStep.

In addition to modeling greater complexity, the use of objects also contributes to delivering ease of use. Without objects, there would be no graphical user interface on the Macintosh or MS-DOS PC. The use of objects is likely to help advance the user interface on other fronts, including touch, voice recognition, gestures, etc.

IBM already offers a PC-based voice recognition system for less than $1,000 that can be trained to recognize a user's voice. An underlying system digitizes the speech pattern and examines it two or three words at a time (bigrams and trigrams), using word relationships to resolve ambiguities.

The Personal Dictation System can allegedly deliver 90% to 95% accuracy, with the rate improving as the user types in corrections in speech transcription.

The Personal Dictation System is only one small example of the way in which the contradictory drive toward greater complexity — manipulated through a simpler interface — is going to yield results in the near future. The Sun/Next collaboration is likely to produce the next fruits.

Babcock is *Computerworld*'s technical editor. His MCI Mail address is 375-2737

Object-oriented systems

Microsoft OLE pushes on

By Melinda-Carol Ballou and Michael Vizard

Microsoft Corp. last week took another step in its race with IBM and others toward establishing its next-generation object-oriented operating system.

As part of a technology demonstration with Digital Equipment Corp., Microsoft for the first time showed a distributed version of its Object Linking and Embedding (OLE) interface running on mutiple platforms. OLE is the key technology Microsoft will use to build Cairo, its forthcoming object-oriented operating system.

For Microsoft, the demonstration answers criticisms from rivals that OLE works only within a single Windows system, meaning users cannot share objects across a network.

But while Microsoft plans to ship a developer's kit this month for distributed OLE, the company does not plan to make that technology generally available until it has the other major elements of Cairo in place in 1995, said Mark Ryland, Microsoft senior programming manager.

In contrast, members of the OpenDoc consortium — the Component Integration Laboratories (CIL) — are expected to offer a developer's kit in the first quarter. OpenDoc is a set of object-oriented specifications based on technology from IBM and Apple Computer, Inc. that has been endorsed by Novell, Inc., WordPerfect Corp., Oracle Corp, Taligent, Inc. and Xerox Corp.

Strength in ubiquity

Because it is based largely on the Distributed System Object Model (SOM) created by IBM, OpenDoc is considered to be a more robust object environment that already supports distributed computing.

However, developers have yet to see any actual OpenDoc code, while Microsoft has already lined up hundreds of developers behind OLE 2.0 running on top of Windows 3.1 and Windows NT.

"Microsoft has got the channels and the [independent software vendors] locked up," said John Rymer, an industry analyst at the Patricia Seybold Group in Boston.

And even the members of CIL have deferred to Microsoft's dominance.

"The tremendous strength of Microsoft's OLE is in how widespread it is. It may not be elegant, but it is out there being used. So SOM will have to talk to OLE," said Cliff Reeves, IBM's program director of object technology products. To accomplish this, WordPerfect is developing technology that will allow OpenDoc applications to exchange objects with OLE applications.

Moving forward

But in the meantime, CIL members said they will push ahead with OpenDoc because they claim OLE is a proprietary technology. "All they have now is a distributed proprietary object solution. And publishing a spec is not the same thing as making source code available," said Scott Handy, program manager for market strategies at IBM's Personal Software Products group.

For the time being, information systems organizations are generally adopting a wait-and-see attitude.

Source: X/Open Co. survey of 780 IS managers

"We have our finger on the pulse and are checking out" Taligent, Cairo and Sun Microsystems, Inc.'s deal with Next Computer, Inc., said Jeffrey Oakes, a systems consultant at International Telegram & Telegraph Hartford. "Strategically, [object request brokers and object-oriented operating systems] are a critical direction for us. But I don't see a clear winner at this point."

Software reuse offers paybacks. See story page 73.

COMmon interest

Microsoft and Digital last week unveiled plans to develop an object specification that will allow OLE 2.0-based applications to be distributed across multiple platforms and interoperate with Common Object Request Broker Architecture (Corba)-compliant objects from Digital.

The specification will ensure that applications written to it can work with Digital's ObjectBroker.

Through ObjectBroker, data from OLE applications can be shared with applications running on any platform that supports Digital's implementation of the Object Management Group's (OMG) Corba standard.

The specification, called Common Object Model (COM), will include relevant portions of OLE's Component Object Model, interfaces and a communications protocol based on the Open Software Foundation's Distributed Computing Environment/Remote Procedure Call.

Digital and Microsoft will be shipping an early developer's release of the COM specifications during the first quarter of 1994. A version of the distributed OLE developer's kit will ship this month.

— Melinda-Carol Ballou

Lingering identity crisis stalks DEC

Users hope for a clearly detailed, long-term strategy at DECUS conference

By Craig Stedman

Attendees at this week's Digital Equipment Computer Users Society (DECUS) conference in San Francisco are expected to press Digital Equipment Corp. to lay out a more coherent long-term strategy and to provide some evidence that its client/server message is starting to filter down to the company's sales force.

Digital tried to paint itself in the colors of open client/server computing at a mid-October product introduction meant to be a defining moment. But users and analysts interviewed last week said the company still suffers from a lack of focus compared with rivals such as Hewlett-Packard Co.

Scott Bowes, chief financial officer at Phoenixville Medical Associates Ltd. in Phoenixville, Pa., said his rating of Digital has improved during the last two years. But Bowes, who is planning a new system purchase for late next year, said he would like the company to "come out of its fog a bit and explain itself better."

"It's a fair criticism to say that they're going through an identity crisis," said Bill Stella, senior vice president of information services at Arkwright Mutual Insurance Co. in Waltham, Mass. "Their public strategy appears to be headed in the right direction, but we'll see."

Conflicting messages

"From sales office to sales office, we get a different message," noted Irv Shapiro, president of Metamor Technologies Ltd., a consulting and systems integration firm in Chicago. "They're not predictable and focused, and that makes them a higher risk in an MIS organization."

Steven Tihor, an assistant research scientist at New York University, agreed that getting approvals for VAX or Alpha AXP purchases remains a hard sell because of Digital's directional uncertainties and continued higher pricing.

Management at the university "is more interested in generic Unix," and Digital's DEC OSF/1 operating system still is not fleshed out enough to compete with more established Unix vendors, Tihor said.

A Digital spokesman said the company's strategy is centered around client/server technology and Alpha, but he acknowledged that "it takes time for things to spread" throughout the organization. Edward Lucente, vice president of worldwide sales and marketing, is scheduled to expand on the client/server plans at the DECUS conference, the spokesman added.

Even users who think Digital has become more customer-focused and is making progress toward righting itself are critical of the company for not giving them a better idea of what technologies beyond Alpha hardware are central to its strategy.

"They're saying they're everything; well, nobody can be everything," said Mark Livings, manager of distributed computing services at Quaker Oats Co. in Chicago. If Microsoft Corp.'s "Windows NT is their direction, then we'd like to start preparing to move from VMS to NT." But thus far, Digital has not been willing to detail its plans to that level, he added.

Lynn Berg, a Gartner Group, Inc. analyst in Stamford, Conn., said Digital's framework-oriented software strategy is particularly unclear. It could take most of 1994 to get everyone at the company on the same page, she said. "The further away you get from corporate headquarters, the more confusing this is."

Digital can probably muddle along until then without losing too many customers, but it will be hard for the company to reach out beyond its installed base, which it must do to grow revenue again, Berg noted. "People who have been sort of not thinking about Digital are still not thinking about Digital," she said. "There's just not enough visibility."

Digital's LinkWorks to get key missing link. See story page 51.

News Shorts

Unix International to close

Unix International (UI) will announce today that it will shut down on Dec. 31, Chief Executive Officer Peter Cunningham said late last week. UI's five-year mission to evolve Unix System V standards and combat the competing **Open Software Foundation** changed when **Unix System Laboratories, Inc.** was sold to Novell, Inc. in July, Cunningham said. The March start-up of the Common Open Systems Environment consortium hastened UI's demise, he added. "A lot of the work UI did can be passed on to **X/Open Co.**," which has become the Unix standard bearer, he said. Some UI vendor members will form a UnixWare Technology Group to give vendor feedback to Novell.

Microsoft starts second Chicago alpha

Microsoft Corp. late last week shipped the first copies of its second alpha version of Windows 4.0, codenamed Chicago. The alpha has 32-bit networking connections — the first version had 16-bit implementations. It will be more widely distributed at a developer's conference in Anaheim, Calif., next week.

U.S. Weather Service downsizes system

Hoping to respond more rapidly to next spring's flood season, the **National Weather Service Office of Hydrology** is installing a client/server river forecasting system at its offices along the Mississippi River. The service is replacing a mainframe-based system with IBM RS/6000 and Hewlett-Packard Co. Series 750 workstations in Kansas City, Mo., and Minneapolis.

Novell announces NetWare Video 1.0

Novell, Inc. showed its NetWare Video 1.0 last week as expected [CW, Nov. 29]. The initial version, slated for January release, allows a NetWare server to deliver multimedia files across a LAN for replay by a Windows workstation running Microsoft's Video for Windows. The package is priced at $1,100 for a five-user version. The next phase of Novell's multimedia strategy is to release software that allows a NetWare server to broadcast real-time video presentations across a high-speed LAN to multiple desktop clients.

IBM PC Co. drops PS/2 server prices

IBM PC Co. last week cut prices of its PS/2 Server 85 and 95 models by as much as 18%. Pricing on a PS/2 Server 85 based on Intel Corp.'s 33-MHz 1486SX chip is now $4,000, down from $4,835, while a 25-MHz/50-MHz DX2-based Model 95 is now $5,335, down from $6,195. The PC Co. also said it would ship more PS/2 servers in the fourth quarter of 1993 than in all of 1992, ending its backlog for that family.

SHORT TAKES Supercomputer maker **Kendall Square Research Corp.** continues to struggle with an accounting problem it first revealed in October. Last week co-founder Henry Burhardt was stripped of the chief executive title, although he remains president, after the company said its loss for 1992 will be about $17.2 million, some $4.5 million more than previously expected. . . . **General Electric Co.**'s Industrial Power Systems Division has outsourced its PC procurement, configuration, support and service to **Entex Information Services, Inc.** . . . **Intel Corp.** and **Microsoft** announced Version 1.1 of their Advanced Power Management Interface Specification. It is also supported by the Plug and Play BIOS specification. . . . **Nynex Corp.** is developing a broad array of networking services to be delivered over a broadband, fiber-optic network that it will build. Services will include video entertainment and information services and interconnections to specialized network service providers.

More news shorts, *page 16*

Work-flow upgrade

Education lender invests in imaging

By Ellis Booker

Sallie Mae, the nation's top holder of insured education loans, last week announced a five-year, $55 million multivendor contract award to develop and deploy an imaging and work-flow system to streamline loan processing.

But the project, which will commence early next year and be fully implemented in 1996, also includes major upgrades to Sallie Mae's desktop and network infrastructure and represents a major commitment by Sallie Mae to client/server computing, observers said.

Starting a revolution

"This technology will revolutionize our entire loan-servicing operation to the benefit of our borrowers, their schools and lenders and, ultimately, our shareholders," said Robert D. Freidhoff, executive vice president of servicing.

The Price Waterhouse office in Columbia, Md., will act as systems integrator on the project. Recognition International, Inc. will provide the imaging and work-flow software. The Dallas firm said the deal represents one of its largest corporate software licenses to date.

The imaging deployment calls for replacing some 3,000 IBM 3270-class dumb terminals with approximately 3,000 486-class 66-MHz PCs at seven regional centers. Each loan center will have a Fiber Distributed Data Interface Token Ring backbone network and an Ethernet LAN for local access to the images. Each servicing center will also have a high-speed document-capture system for inputting new documents and converting microfilm to digital images.

The centers will link back over a Sallie Mae private wide-area network (WAN) to a central electronic document repository at Sallie Mae's Corporate Asset Repository in Herndon, Va. This center, which will be backed by a redundant site in Pennsylvania, will use SPARCstation 2000s from Sun Microsystems, Inc. to store more than 54 million documents per year.

The seven regional loan processing centers are currently connected to mainframe resources in Herndon over T1 lines, but Sallie Mae is evaluating upgrading the WAN to frame-relay technology.

Donald J. Coleman, vice president of Sallie Mae's Servicing Division, said he expected a "three- to five-year payback," depending on the loan volume. Savings, he added, would also come from the ability to add volume without increasing capacity.

"We've been rated far above our competitors in service levels, and [imaging/work flow] will enable us to raise the bar," Coleman said.

Sallie Mae will rely on Price Waterhouse and its own in-house training to ease the migration from 3270 terminals to the high-powered workstations. "We're putting in walk-up workstations in the centers to get people used to dealing with a mouse and Windows . . . and a tutorial to take the rep through the technology."

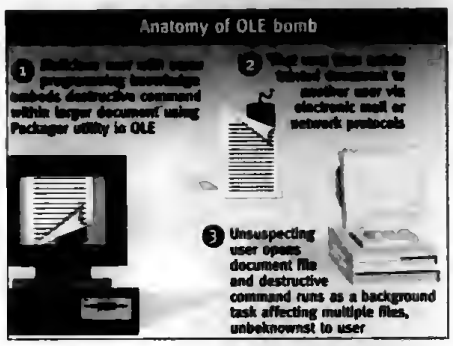
OLE

CONTINUED FROM PAGE 1

that a single individual can accomplish is staggering. And it may only take someone with a rudimentary knowledge of Windows to send by E-mail something that would decimate a PC population at a given site, according to Ralph Trickey, a consultant at Cap Gemini America, Inc. in Middletown, Ohio.

User beware

According to Trickey, the fundamental problem is that when an object is posted, the user invoking that object has no idea whether it contains a simple document or a document that has been embedded with a destructive command such as delete*.*.



And as users begin to adopt offerings such as Microsoft's Office 4.0, it will not be long before OLE is widely used and some of the more intrepid users become familiar with its intricacies.

In general, the additional security issues brought on by the adoption of object technology are endemic to any local operating system that does not include built-in security features. As such, Windows 3.11 and Windows 4.0 will be more susceptible to abuse than high-end offerings that include built-in security and journaling features such as Microsoft's Windows NT. However, administration of offerings such as NT typically require too much memory and technical knowledge to be deployed on a large-scale basis on end-user desktops.

While OS/2, Unix and Novell, Inc.'s NetWare offer higher levels of security than Windows 3.1, the security features in OS/2 are only marginally better than those in Windows because OS/2 includes a backup and restore facility, and many sites do not take advantage of the security features in Unix and NetWare, said Bob Bales, executive director at the National Computer Security Association in Carlisle, Pa.

To combat this threat within Windows, IS managers may want to disable some OLE features on user desktops, such as the Packager utility for embedding objects, said Mark Ryland, Microsoft senior programming manager. But at the same time, a determined individual could easily write an equivalent Packager utility, he said.

Security forthcoming

In the meantime, Ryland said, Microsoft is studying the issue and may write some utilities to address OLE security in the future. But again, he noted that just about any utility can be overcome on a local operating system that does not include built-in security.

Ryland noted that knowledgeable users can already accomplish many of the same security breaches using OLE 1.0, but as yet Microsoft has not seen OLE 1.0 abused.

However, OLE 1.0 has not yet been widely implemented by users. And Bales noted that OLE is not the only new technology open to abuse.

And many sites will be evaluating a wider range of technologies in 1994 that are also open to abuse, ranging from the OpenDoc specification from IBM, Apple Computer, Inc. and Novell to new multimedia and networking protocols.

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Client/server

IBM division at a crawl during first year

By Johanna Ambrosio and Ed Scannell

IBM's dedicated client/server business marked its first anniversary Nov. 23, having made only limited progress signing up customers and relaying its message.

Part of the problem, observers said, is of IBM's own making: It had not — until very recently — articulated a coherent strategy in the client/server arena [CW, Nov. 29]. Another almost equal burden is one that virtually every vendor faces: trying to make sense of a confused market in which customers themselves do not always know what they want.

"Saying 'client/server' is like saying 'the planet Earth,'" said John Chapman, president of the IBM user group Share. Even in his company, he said, "There are different views of what client/server is and how it should be used."

IBM's Worldwide Client/Server Computing group is now meeting with large customers to find out what users' needs are, "and IBM is struggling as hard as the users are" to figure it out, he added.

The client/server group, announced with great fanfare a year ago [CW, Nov. 30, 1992] and reorganized in September, combines product development with marketing. It works with all of IBM's other businesses as well as with third-party vendors to develop new products and combine existing ones into client/server solutions.

The group also works with the IBM Consulting group and IBM's Integrated Systems Solutions Corp. to provide outsourcing, programming and other services.

Worldwide Client/Server Computing is making some progress, said Peter Tarrant, director of IBM client/server marketing. The group claims some 100 U.S. customers, including such name accounts as U.S. Air, Ford Motor Co., Prudential Securities, Inc. and Barnett Bank. However, according to Tarrant, IBM counts as a client/server customer any user to which it has sold hardware, software or services.

Still, he said, "We're not as well understood as I'd like us to be. There is definitely confusion" about IBM's client/server message. At least part of that is due to "image" problems, he said. "The outside world thinks of a mainframe company in the client/server world as an oxymoron, and so we have this baggage."

In addition to articulating a strategy — which IBM's announcement of its Open Distributed Computing System blueprint next year will help — it recently completed a 12-city road show on client/server.

Wayne Pattison, director of data center operations at Kansas City Southern Railway Co., attended the seminar in Kansas City, Mo. "I didn't learn a whole lot, but I did learn that IBM is headed toward client/server. I believe them, and I think they're like me: being dragged kicking and screaming."

Users who have looked to IBM for client/server help offered mixed reviews.

Blue Cross/Blue Shield of Minnesota in Eagen worked with IBM's client/server unit about a year ago to develop a PC-based system for tracking and paying pharmacy drug claims. The 300-workstation application, based on an Oracle Corp. database with IBM OS/2 servers and workstations, was designed and developed by IBM.

"They were extremely responsive," said Jack Yarbrough, chief operating officer at Pharmacy Gold, Inc., a Blue Cross/Blue Shield division. "At one point we had a printer problem, and they took printers off their own employees' desks and brought them out."

But another client/server customer who requested anonymity said that although his company bought its equipment from IBM, he opted for programming services from another vendor. "IBM just charges too much," he said.

“We were told it was impossible to develop a client/server application without extensive retraining. Then we talked to Micro Focus.”

Larry Lowder, Systems Architect, Questar

Mountain Fuel Supply®, a division of Questar®, is a utility company supplying natural gas to 750,000 customers across Utah, Wyoming, Idaho and Colorado. The company's success is largely driven by its implicit belief that the customer is number one.

Yet, IT also plays its part in that success: client/server architectures and graphical user interfaces (GUIs) have helped Mountain Fuel Supply move applications and information closer to the customers and the employees. All of which has resulted in an augmented level of service being offered to customers.

When Larry Lowder, one of Questar's Systems Architects, set out to build the client/server architecture for Mountain Fuel Supply, he needed solutions, not skepticism. For the first project, a cashiering system, he needed to link workstations with OS/2® to the DB2® database on the host, running CICS.

"We were faced with having to spend up to two years retraining our COBOL programmers in C and API calls. Then we discovered Micro Focus Dialog System™. It allowed us to build the client functionality we required, and re-engineer the existing mainframe application as a server."

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GSA Contract Number GS00K93AGS6403.

DCE integration: Anemic, but available

By Elisabeth Horwitt

■ The good news is that the major network operating system vendors are already beginning to provide software that allows their client systems to access resources on the Open Software Foundation's (OSF) Distributed Computing Environment (DCE) servers. The bad news is that these early products provide only limited support for the OSF standard.

And while the quartet of IBM, Novell, Inc., Banyan Systems, Inc. and Microsoft Corp. are each promising more robust integration between their own global services and those of DCE, users will not be able to get their hands on these offerings any time soon, since time frames for commercial introductions are at least a year away or nonexistent.

If and when the vendors follow through with their plans for full DCE support, however, their products potentially would fulfill the corporate user's ideal of being able to access and administer a hodgepodge of Unix-, network operating system- and host-based resources through a single, coordinated directory system.

DCE comprises a set of security, naming, directory and authentication services that were designed to ensure reliable resource sharing and communications across heterogeneous distributed systems. Also included is the Remote Procedure Call (RPC), which defines how a query is sent from one system to another over a transport-independent network.

Extent unclear

The OSF standard has gained broad support in the Unix and mainframe communities; however, the major network operating system vendors have been maddeningly difficult to pin down about whether, and to what extent, they will adopt the protocol as a standard.

These vendors will certainly provide gateways between their own servers and DCE, as a way for their clients to gain access to Unix-based resources, said Bob Gill, a vice president at Gartner Group, Inc., a Stamford, Conn., research firm. Less clear is whether the vendors will actually integrate DCE fully into their own global services so that customers can essentially implement one set of services across their heterogeneous environments, Gill said.

The University of Michigan has officially chosen DCE as the basis for a "Future Computing Environment" that will provide the full set of services on the mainframe, including security, directory, authentication, mail and remote dial-in, across an extremely heterogeneous client/server environment, said Larry Gauthier, manager of the technology assessment group in the university's information technology division.

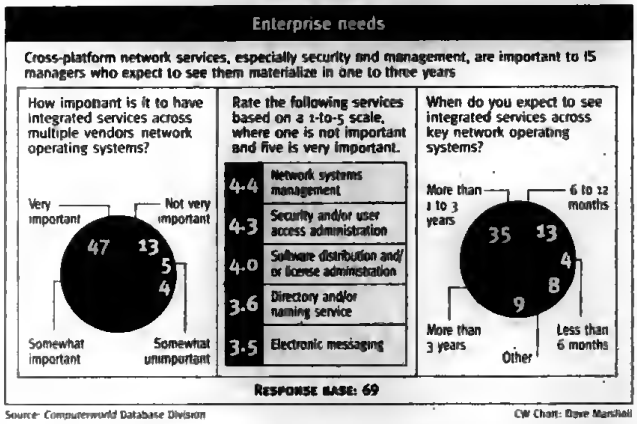
Similar solution

However, because DCE currently does not run across the full gamut of the university's client/server systems, it will probably do what others in similar circumstances are doing: create a "lower-case distributed computing environment" that mixes DCE standards with proprietary networking products, Gauthier said.

Other network administrators, particularly those outside the Unix world, had doubts about DCE's ultimate effectiveness as a standard. "DCE might provide more universal client access, but things are up in the air until the major players reach a truce" on how their systems can talk to each other, said Bruce Evans, network administrator at the National Immunization Program in Atlanta.

Currently, IBM is the only vendor to have publicly committed to implementing the full DCE architecture across its major platforms and to adopting DCE services as the glue for connecting its client/server systems globally. It has been rolling out DCE across OS/2 and AIX.

Banyan plans to implement DCE compliance in its StreetTalk directory, said Bill Johnson, vice president of corporate business development. The vendor plans next year to roll out that compliance in phases, including DCE's security system, X.500-compliant directory and RPC, he added.



Source: Computerworld Database Division

CW Chart: Dave Marshall

Share and share alike

IBM and Digital are perhaps the most notable large systems vendors looking to share their proprietary skills, partly through DCE support. Digital is in the process of rolling out the OSF standard across its OSF/1, Windows NT and OpenVMS hosts. IBM, meanwhile, has already made core DCE services available on AIX and OS/2 and plans early-availability versions of DCE on AS/400 and MVS hosts next year, IBM director Art Olbert said.

Meanwhile, Novell and IBM are working to implement software that will integrate DCE directory services with NetWare v3.11's bindery-based directory, a Novell spokesman said.

Novell and Microsoft are both working on gateways that will enable their client systems to log on to a DCE-based host and, conversely, to allow a DCE client to log on to a NetWare or Windows NT server, company spokesmen said.

However, gateway-based interoperability is a poor substitute for "true integration" between DCE and various vendors' proprietary service environments, Gaothier said.

Microsoft's Windows NT and Windows clients can already access DCE through a client version of the DCE RPC, said Erin Contorer, lead program manager of Windows NT Systems. Digital Equipment Corp. will ship a full DCE client for NT this spring, he said. Microsoft has no plans for a full Windows DCE client, mostly because DCE takes up too much RAM.

RPC-based access leaves too much low-level programming to users before their clients can get at DCE services, Johnson said. Banyan hopes to provide a subset of DCE application programming interfaces to enable popular desktop environments to fully access DCE-based services, he added.

Novell directories

CONTINUED FROM PAGE 1

tected its network services around the StreetTalk global directory from the word go, Novell is stuck trying to tie NDS to "a millstone of an installed base of old [applications and services] that are not directory-aware," Strom said.

However, Novell will still be ahead of archrival Microsoft Corp., which plans to provide an object-oriented global directory service on Windows NT Advanced Server with Cairo in 1995.

Announced last March with NetWare 4.0, NDS laid the foundation for a single directory service that would allow client applications and users to transparently access resources across the enterprise on NetWare servers — eventually reaching UnixWare servers as well.

We want to "administer NetWare 3.11 and 4.01 servers from one workstation, using NDS, instead of having to go to each 3.11 server manually to change or delete users," said Sheryl Grossman, senior technical analyst at Transamerica Financial Services in Los Angeles.

Novell will deliver those capabilities around the time of its Brainshare developer's conference in March with the announcement of NetSync and NetWare Administrator, said Richard King, executive vice president and general manager of NetWare Systems Group.

NetSync allows the user to view and manage 3.X servers from "one vantage point" via a NetWare 4.X server, he added. The software will work in concert with NetWare Administrator, which allows the administrator to make changes to an existing 4.X directory.

Several users said the above introductions are exactly what they were waiting for. The integration of NDS with 3.11 bindery directories "sounds super," and the ability to move branches of the global directory around "would also be helpful to us," said Chuck Rush, a systems project manager at McDonald's Corp.

Staying single

The other big area where NDS has yet to fulfill its promise is in providing a single global directory across major NetWare Loadable Module-based enterprise services, such as Novell's Global Message Handling Service (MHS) and third-party SQL database servers, said Lorie Moukias, project leader at Hoechst Celanese Corp. Until that happens, in addition to NDS, companies must maintain "four or five directories that don't work together," each controlling user access to a different type of service.

NDS will eventually provide resource naming and user authentication across the full range of NetWare-based services, including E-mail, fax, database and host gateways, King said, instead of keying in a password or identification first on NDS and then again for the individual service, the user will be able to say, " 'Show me fax servers,' and he only sees the ones he can access," King said.

For this to happen, however, third-party NetWare service providers need to write to an application programming interface that hooks their software to a public key and naming service within NDS, King said.

On the E-mail front, Novell plans to introduce this spring a version of Global MHS "architected for NDS." Changes made on the MHS directory will automatically propagate to the NDS directory, King said. An auxiliary directory will be used to tie into legacy MHS systems whose directories are based on the NetWare 3.11 bindery. As a result, users can go through NDS to gain access to any MHS-compatible E-mail service, King said. Banyan's StreetTalk is a consistent directory for E-mail and other services.

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Amex extends parallel plan

CONTINUED FROM PAGE 1

data processing price/performance while providing a level of performance unachievable by conventional computer systems," the $27 billion financial services company said in an internal report obtained by *Computerworld*. "The scope of the technology is broad: It can be applied to all American Express businesses."

Mystery machine faster

Amex recently benchmarked six applications on six platforms representing four basic approaches to parallel processing (see chart). One application creates a file of preapproved potential credit-card members from credit bureau tapes and other sources.

The Prospect Credit system ran 100 times faster on an unidentified massively parallel computer than on a single IBM ES/9000 processor, the company report stated. That benchmark led to a pilot project that will result in a production system early next year. Company officials declined to provide specifics.

However, despite the bullish assessment and plans to roll out some parallel processing applications next year, the technology will not eliminate the glass house any time soon.

"The plans we have are not 'full speed ahead,'" said Bob Mercurio, director of advanced technology at American Express Travel Related Services Technologies. "There are issues with systems management, software development, reliability, security and integration with existing environments."

Advanced languages and development tools are also lacking in the parallel arena, Mercurio said. And of reliability, he said, "Ninety-percent uptime doesn't cut it in the commercial world."

Vendors of these systems tout their favorable price/performance ratios, but Mercurio said he would gladly pay higher prices for added uptime.

Amex is not alone in this assessment (see chart). "Definitely, there's a wariness about using this [technology] for mission- or business-critical functions," said David Frankel, director of technology at Gary Smaby, Inc., a research consultancy in Minneapolis. "The management software is still relatively immature if you're running a 7-by-24 operation."

Training the right people

Developing expertise is a tough issue as well. "I'm still trying to find people," Mercurio said. "I ask [parallel processing systems vendors] where they find people, and nobody has given me a good answer yet."

Despite these obstacles, the company said parallel processing — based on so-called "massively parallel" systems or clusters of more conventional computers — will enable Amex to mine competitive gold from terabytes of data in ways not economically feasible with traditional mainframes.

For example, the ability to quickly process huge amounts of credit-card data would enable Amex to target products and services to card holders in near-real time.

"We can mail restaurant or service coupons as soon as travel reservations are made," the company said in its report. "And we can identify products and services available in one region that are hard to find in another."

Amex added that because it has both the consumer and provider side of each transaction, it can "offer card members products and services based on their spending patterns, and we can offer service establishments profiles of their customer base.

"The information needed to create . . . business opportunities lies buried in our databases," the report continued. "Right now, even nightly batch processing is beyond our hardware capacity. But parallel processing will open up many marketing opportunities that are currently unthinkable."

Sifting through massive amounts of data is conceptually possible with mainframes, but it is so demanding that multiple mainframes would be needed. Thus, mainframes are not economically viable for such tasks, analysts said.

Conversely, the scalability of massively parallel processor (MPP) architectures makes them attractive for database mining, Frankel said. "You may start with a small MPP, and if the database grows, the system can grow with it."

On the edge

Amex has already deployed parallel processing in at least two areas (see story bottom left).

"American Express is very much a leading-edge user of technology," said Howard Richmond, director of high-performance computing at Gartner Group, Inc. in Stamford, Conn. "They are very visionary in their grasp of technology."

But Amex is not resting on this reputation. In fact, the company worries that competitors may have an edge in parallel processing.

For example, Citicorp uses nine parallel processing systems from Teradata Corp. to merge data about checking and savings accounts, credit cards and mortgages to provide a complete financial picture of each customer.

Borrowing experience

Amex also cited bank-holding companies and more recent competitors for the credit-card market, such as AT&T, GTE Corp. and automobile companies, which are already strong in parallel computing.

For example, AT&T owns Bell Laboratories and NCR Corp., which owns Teradata. General Motors Corp. owns Electronic Data Systems Corp. and has years of experience in the use of parallel systems.

The Amex report pointed out that Bano One Corp., a leading bank-holding company, has embarked on a $100 million re-engineering effort that will lead to the capture of 12,000 pieces of information on each customer. "As we consider the possibilities, our competitors are acting on them," Amex concluded.

Chicago bureau chief Ellis Booker also contributed to this report.

Parallel efforts

Parallel processing systems benchmarked by American Express

Vendor	System	Type
Hewlett-Packard Co.	890	SMP
	890	FDDI workstation cluster
Kendall Square Research Corp.	KSR-1	Shared memory, MPP
Maspar Computer Corp.	MP-1 & 2	Distributed memory, MPP
NCR Corp.	3550	SMP
Sequent Computer Systems, Inc.	750	SMP
Thinking Machines Corp.	CM-5	Distributed memory, MPP

Applications tested included mortgage arbitrage, credit-card spending, monthly reporting on spending and preapproval of credit-card prospects.

Source: American Express Travel Related Services Co.

By leaps . . .

Today, the market for massively parallel computers is 95% scientific and 5% commercial. By 1997, the commercial sector will account for 70% of MPP sales. Meanwhile, the MPP market will have grown from $500 million to $5 billion, according to Gartner Group.

. . . and bounds

Parallel processing technology will double in capability every 12 months for the rest of the decade, yielding a 250-fold performance improvement, according to the Advanced Technology Group at American Express Travel Related Services Co.

Putting MPP into action

American Express has done more than write research reports about the feasibility of massively parallel processing (MPP) to support its essential business operations. The company has already deployed at least two MPP applications.

The first was with Amex subsidary Lehman Brothers, Inc., which invested $2 million in a mortgage arbitrage application running on an MPP platform. It has generated $15 million annually in revenue, according to Amex.

A larger and more ambitous application, called Quantum, is now being tested by American Express Travel Related Services Co. It is scheduled to go into production in the first quarter of next year.

Quantum will be applied against Travel Related Services' huge marketing database, compressing a week-long batch process to a day. Specifically, it will handle a 300G-byte database that receives thousands of queries per week, according to John Peterson, vice president of marketing information technology.

"We knew what we had didn't work, but we didn't know what would work or if the problem was solvable," noted Peterson, who said parallel computing "was generally seen as an obvious solution."

The application — five years in the making — was developed by Amex subsidary Epsilon Data Management, Inc. in Burlington, Mass. Epsilon used a 64-processor CM-5 computer from Thinking Machines Corp. in Cambridge, Mass., to act as a number-crunching client to an IBM MVS mainframe acting as a data server via an UltraNetwork Technologies, Inc. 100M byte/sec. link.

A 128-processor CM-5 is now being tested at Travel Related Services' global computer processing facility in Phoenix. The application now runs a custom database. Peterson said the kind of database is a secondary concern at the moment. "Getting it to run at all is what's really important now," he said.

— Ellis Booker and Gary H. Anthes

Parallel pros and cons

Do you perceive the following benefits and drawbacks in your use of parallel processing?

(PERCENTAGE OF 69 RESPONDENTS)

	Benefits
86%	Better price/performance
81%	Better service to internal users
65%	Ability to run applications
62%	Competitive advantage
36%	Better customer service

	Drawbacks
52%	Immaturity of tools, utilities, databases
52%	Difficulty of software development
43%	Difficulty of migrating legacy applications
42%	Training
32%	Concerns about vendor staying power
25%	Reliability

Source: *Computerworld* Database Division

In the beginning, Genesis promised much

Years later, project finally yields benefits at Amex

By James Connolly
ATLANTA

Call it a strategic application or a "big-bang" project, American Express Co.'s Genesis Project was intended as a total replacement of the company's core information systems when it was initiated in 1987 under a cloak of corporate secrecy.

Today, after years of work and questions about the project's merits, a greatly scaled-down Genesis is yielding benefits for American Express' Travel Related Services Co.

Last week, Albert B. Crawford Jr., executive vice president of strategic business systems, outlined some of those benefits at the Retooling '93 conference.

Amex assets

Crawford said examples of the reusable assets already developed under Genesis — which American Express plans to complete by the end of 1994 at a revised cost of $120 million — include an enterprise data model, a re-engineering test facility and a user training database.

He said new applications now allow Travel Related Services to accomplish tasks overnight, such as a repricing project in France. In the past, that would have taken months.

However, Genesis did hit potholes along the way. American Express originally froze its legacy systems while planning to rewrite all applications using Texas Instruments, Inc.'s Information Engineering Facility (IEF) computer-aided software engineering tools.

That resulted in the "waste" of 18 months' work because American Express failed to define an information architecture before beginning system design and, in part, because IEF was too "immature" for Genesis' needs, Crawford said.

Another key element, IBM's DB2 database management system, "broke" under the weight of Genesis' design, Crawford noted.

He said some elements of Genesis just failed to pass cost-efficiency tests, citing the example of a client/server-based card member support application originally budgeted at $70 million.

Computer clusters may be answer

American Express last week declined to give details of the parallel processor benchmark results but said no one architecture is right for all applications (see story at left).

However, American Express programmer/analyst Ian Simpson said he was bullish on the promise of clusters of workstations and/or symmetrical multiprocessors.

"Given pending developments in high-speed communications, the gap between clustered systems and custom-built, massively parallel systems will narrow dramatically," he said.

Simpson said computer clusters may emerge as the parallel solution of choice for all but the most demanding applications. He said the approach is attractive to those familiar with networking and client/server technology, standards are further along, and much more software exists than for the massively parallel options.

"An interesting concept developing now is not massively parallel processors per se, but workstation farms," said Omri Serlin, editor of "The Serlin Report on Parallel Processing" in Los Altos, Calif.

"It is possible that rather than have these clever massively parallel architectures, a much simpler approach may emerge for high-performance computing."

—Gary H. Anthes

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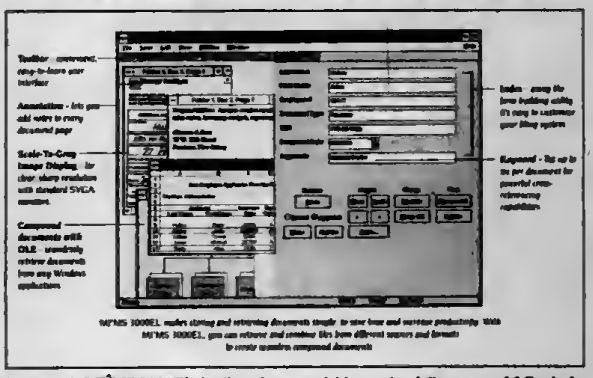

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News Shorts

Cable show offers multimedia previews

The Western Cable Show in Anaheim, Calif., last week was the place to be to catch a ride on the information superhighway (see story at right). **Zenith Electronics Corp., General Instruments Corp.** and **Intel Corp.** showed modems they claimed will enable PCs to access cable lines to retrieve data up to 1,000 times faster than is possible via telephone lines. **Comcast Corp., Continental Cablevision, Inc., Cox Cable Communications, Tele-Communications, Inc.** and **Time Warner Entertainment**, meanwhile, said they will team up to provide telecommunications services using digital video, fiber-optic and wireless technologies.

Bachman plots turnaround

Bachman Information Systems, Inc. President and Chief Executive Officer Peter Boni said last week the firm has a series of client/server products slated for 1994. These include a new version of application development tools for Windows and OS/2 from Bachman acquisition **Cooperative Solutions, Inc.** In addition to Bachman's traditional modeling tools, the company will target the database design and re-engineering, performance analysis and professional services areas with new client/server Windows products.

NCR exec resigns after harassment suit

John R. Poole, a senior vice president in charge of **NCR Corp.**'s computer business in the Americas, has stepped down from his position at the company amid sexual harassment charges filed by a former female employee. J. Meg Olsen, a 13-year veteran of NCR's sales force, filed a lawsuit against Poole and three other male supervisors, charging them with "blatant sexual harassment and discrimination." Poole, a 33-year NCR veteran, claimed the charges are "unfounded."

Macintosh development from Uniface

Uniface Corp. will unveil this week an industrial-strength application development environment for the Macintosh that is portable across platforms, including DOS- and Windows-based PCs. The Uniface Macintosh development environment will be available in the first quarter, with a single Macintosh development license selling for $4,400.

Better taxing through technology

The **Internal Revenue Service** announced a reorganization enabled in part by its $7 billion tax systems modernization program. The IRS said 16,000 employees freed up by new systems — and by accompanying business process re-engineering — will be assigned to jobs that improve public service and increase tax compliance from 82% to 90% by 2001. Each 1% brings in $7 billion more in tax revenue, the IRS said.

Ask not for whom the toll bells

The Illinois Tollway, the most heavily traveled toll road in the U.S., last week became the first to use an electronic collection system. The I-Pass system is deployed at nine of 17 sites on a highway near Chicago. A commuter can mount a transponder in his car that communicates with an antenna in the toll lane. Fares are deducted from a prepaid account. The system was designed by **AT/Comm, Inc.** in Marblehead, Mass.

SHORT TAKES The U.S. **Department of Justice** has given its approval for a merger between **Intelt, Inc.** and **Chipsoft, Inc.** . . . **The ASK Group, Inc., NCR Corp.** and **Radius Retail Ltd.** plan to build a set of retail management and analysis applications based on ASK's Ingres database and Windows fourth-generation language application development tool kit.

Interactive multimedia

Businesses test-drive info highway

By Stephen P. Klett Jr.

A new pay-per-view option may be on its way to a cable service near you, and no, it is not "The Best of Beavis and Butthead" or the latest Madonna concert. It is an interactive multimedia network that beta users expect will vastly improve their business processes.

The network, unveiled last week at the Western Cable Show in Anaheim, Calif., is based on bridging technology from Digital Equipment Corp. and LANcity Corp. [CW, May 17]. Arizona State University and Times Mirror Cable TV also contributed to its development (see chart).

In its initial implementation, the network is aimed at connecting large manufacturing companies to their suppliers and subcontractors. McDonnell Douglas Helicopter Co., Modern Industries, Inc. and Tempe Precision Aircraft began beta-testing the network this month in Phoenix.

"If it performs like they say it will, I think businesses will be standing in line to get into it," said Ron Boes, vice president of operations at Tempe Precision in Tempe, Ariz., a McDonnell Douglas parts supplier.

Called ECnet, for Electronic Commerce Network, the network allows cable operators to use their existing fiber cabling to provide Ethernet-based multimedia networks for metropolitan areas.

Able to support digital video data transmission at Ethernet's full 10M bit/sec. transmission speeds, the cable TV infrastructure will enable users to videoconference with one another while sharing applications and database resources. Digital said its Ethernet-to-cable bridge supports communications distances of up to 70 miles over standard cable TV wiring.

ECnet will enable engineers at McDonnell Douglas to interact on-line with engineers at Tempe Precision during the development of the company's first commercial helicopter.

Cable connection

Each member of the ECnet consortium supplies a vital piece of the network

Organization	Contribution
Times Mirror Cable TV	7,000-mile fiber/coaxial cable network in Phoenix
Digital	Bridge to connect Ethernet with cable infrastructure; network consulting and management services
Arizona State University	GUI to resources connected to cable network; development of future manufacturing applications

Solves problems in minutes

Boes said the ability for engineers at different sites to simultaneously access and manipulate the same three-dimensional drawing will solve design problems in a matter of minutes rather than days. This could cut a new part's development cycle from eight months to six weeks, he said.

"We've been trying to develop these interactive video capabilities on our own for some time and haven't been able to do it, so this consortium is a very welcome sight," said John Harper, research and engineering specialist at McDonnell Douglas.

Boes estimated it will cost Tempe Precision $20,000 in hardware to connect its team of three engineers to ECnet, followed by a monthly user fee of roughly $250, which he expects will drop over time.

Both Harper and Boes said that while using a cable supplier to support the mission-critical needs of their businesses raises some reliability concerns, they believe cable technology is mature enough to depend on. The bigger issues of affordability, security and cultural acceptance remain to be resolved, they said.

"We see this as the first step toward developing a national data highway for manufacturing or anyone involved in intensive imaging applications," said Jay Campbell, a consultant for Digital.

Chip

CONTINUED FROM PAGE 1

multimedia solutions at IBM's Large Systems group, noted that business applications are going to be the dark horse of interactive TV.

"Home-oriented entertainment is just a vehicle for developing the infrastructure," she said, adding that information systems management will help define the role of multimedia in corporate America.

When deployed in under-$3,000 desktop systems such as the ones IBM's Power Personal Systems division expects to deliver next year, the one-two punch of the PowerPC and Malibu chips could rival the performance of a $50,000 to $75,000 Silicon Graphics, Inc. workstation, said a source familiar with the chip's design.

As such, systems using the PowerPC/Malibu tandem would put that much more price/performance pressure on Intel Corp. and its Pentium-based multimedia strategies in both the home and business markets, analysts said.

Kaleida President Michael Braun downplayed those implications, saying Malibu is tightly focused on powering the TV-top boxes that provide a variety of interactive home programming and entertainment.

Designed to complement

Braun said Malibu, which Kaleida designed, is meant to complement the embedded PowerPC that will be in the set-top box.

"We didn't want to duplicate the processing power of the PowerPC," Braun said. "Instead, we designed a graphics accelerator chip that would make our applications scream."

But that may be shortchanging the chip, which insiders said would be a natural for providing added juice for power-hungry graphics applications on PCs and workstations.

The Malibu chip is part of Kaleida's Project Skywalker, a TV-top device designed to be a key component of interactive TV. Applications crafted using ScriptX, Kaleida's multimedia development language, can be run in the set-top box, according to Braun. He said the device will make its way into homes by the end of next year or early 1995.

Internally, Kaleida has been torn over whether to focus on the consumer or business markets, sources said. If Kaleida initially leans toward the business end, the company risks watching Japanese companies beat it to the punch in the consumer market.

"If you want to do all this multimedia, super data highway stuff, and you do not cover the home market well, you are going to get shut out of selling some pretty exciting technology," said a source close to Kaleida.

"All the money is in the consumer markets now. But [the technology] has significant implications for business markets."

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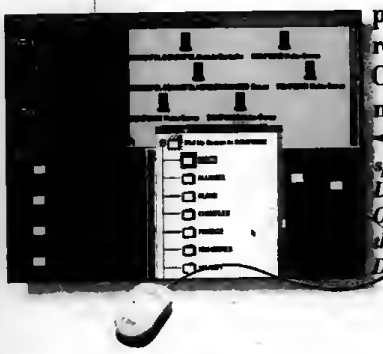

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Lotus' SmartSuite gains momentum

By Michael Vizard

Microsoft Corp. may have a two-year head start in PC application suites, but Lotus Development Corp. appears to be making up for some lost ground.

Lotus' SmartSuite accounted for 34% of $240.1 million in total sales in the third quarter ended Sept. 30. In that same period a year ago, SmartSuite accounted for less than 10% of $207 million in total sales. In contrast, Microsoft claimed that suite sales account for more than 50% of the PC software units it sells.

Lotus had been unable to effectively compete in the suite space until a substantially improved version of 1-2-3 for Windows became available last summer. Since then, however, the suite market has become one of the fastest-growing segments of Lotus' product line and a key battleground with Microsoft.

"Suites are one of the most important trends in the PC application market, and SmartSuite 2.0 is a very solid offering," said Chuck Stegman, an industry analyst at Dataquest, Inc. "Both Lotus and Microsoft have done very good jobs educating people about the benefits of suites, and it's paying off for both."

In fact, Stegman noted that Microsoft has been able to keep its suite momentum moving although it has yet to ship all of the components for Microsoft Office 4.0, which was announced last fall. Microsoft has delivered Word 6.0, but Excel 5.0 and PowerPoint 4.0 are not scheduled to ship until this month (see story below).

Instead, purchasers of Office 4.0 are receiving coupons for free upgrades to the next versions of Excel and PowerPoint. "This hasn't seemed to affect Microsoft sales of Office," Stegman said.

Meanwhile, Lotus successfully pitched SmartSuite to McKesson Corp. in San Francisco and the SSM Health Care System in St. Louis.

Out of a potential base of 2,000 users at McKesson, more than 550 SmartSuite packages have been deployed since April 1, said Bill Vanderlind, senior microcomputer and network specialist there.

McKesson chose SmartSuite over three other options — including Office — because SmartSuite is cheaper and its applications share a common look and feel and run on multiple platforms.

Vanderlind said McKesson also looked at a best-of-breed recommendation made by a consulting firm and considered replacing the word processor component of a suite with WordPerfect Corp.'s namesake program.

But in the end, Vanderlind said, the integration between the 1-2-3 spreadsheet, Ami Pro word processor, Freelance Graphics presentation graphics software, CC:Mail and Organizer personal information manager made the full SmartSuite package more attractive.

Meanwhile, SSM Health Care, which manages 17 hospitals, clinics and nursing homes, is beginning to overhaul its office automation applications. The company expects to support as many as 3,000 users with SmartSuite packages in the next two to three years, application specialist Kelly Hible said.

Excel 5.0 delayed

The delivery schedule for Excel 5.0 has begun to slide. Microsoft plans to ship the spreadsheet, originally slated to ship last month, before year's end, a spokeswoman said.

Microsoft attributed the minor delay to additional testing. Beta users said providing support for two macro languages in Excel 5.0, which now supports Visual Basic as a macro language, requires Microsoft to go through an expanded testing procedure.

"You have to test Visual Basic side by side with the older XLM macro language to ensure that everything is backward-compatible. It's a monumental project," said Don Baarns, president of Baarns Consulting Group in Sylmar, Calif.

—Michael Vizard

WordPerfect Office next to go wireless

By Lynda Radosevich

WordPerfect Corp. will be the latest vendor to offer wireless messaging when it announces a partnership this week with Intel Corp. and RAM Mobile Data to wirelessly enable its WordPerfect Office software.

The partnership mirrors a similar arrangement that Lotus Development Corp. and Microsoft Corp. have with Intel and RAM Mobile Data whereby Intel sells a wireless modem that includes drivers to run electronic mail over the RAM Mobile Data network.

While not the first wireless E-mail offering, Office includes wireless calendaring and scheduling and task management capabilities that Lotus and Microsoft do not offer, according to a WordPerfect spokesman.

Also, Office is different from Lotus' CC:Mail in that users have only one mailbox, even if they use different computers while working at the office or on the road.

"Before, you had to have two log-ins if you used [an Apple Computer, Inc.] PowerBook and a DOS computer. Now it doesn't matter where you are or what you are on, you only have one mailbox," said Julie Watson, manager of office automation at Iomega, Inc., a wireless Office beta site in Roy, Utah. When users read their messages while on the road, the messages are marked "read" when they return to the office, she explained.

Wireless capabilities for Office Remote for DOS are now available. A Windows remote product for dial-in and wireless connections will ship by year's end, and a Macintosh version will ship in the first quarter of next year, according to WordPerfect. A five-user client pack lists for $495.

Limited offer

RAM Mobile Data said it will offer four months of unlimited messaging for $75 to people who purchase the Intel wireless modem to work with wireless WordPerfect Office. RAM Mobile Data's regular charge is $135 per month.

For Read Gilgan, a director of learning support services at the University of Wisconsin in Madison, the Macintosh version means that PowerBook users can dial in directly for their messages rather than manually work through a "Mickey Mouse" arrangement of computing systems, he said.

CDPD plans

Additionally, WordPerfect is talking with wireless Cellular Digital Packet Data (CDPD) providers, such as McCaw Cellular Communications, Inc., but would not provide availability dates. Watson said she is beta-testing Office's CDPD services to supplement RAM Mobile Data's wireless coverage.

Last month, Lotus endorsed McCaw's CDPD technology — which operates over the existing cellular telephone channels — but also has not provided delivery dates for wireless CC:Mail and Notes.

Microsoft has not made any CDPD announcements, but McCaw demonstrated Microsoft Mail operating over a CDPD network at Comdex/Fall '93 last month.

Iomega users will most likely want both types of wireless capabilities because the salespeople already have preferences, Watson said.

Separately, WordPerfect said by the second quarter of next year, small company and remote office users will be able to use a WordPerfect hub installed at MCI Communications Corp.

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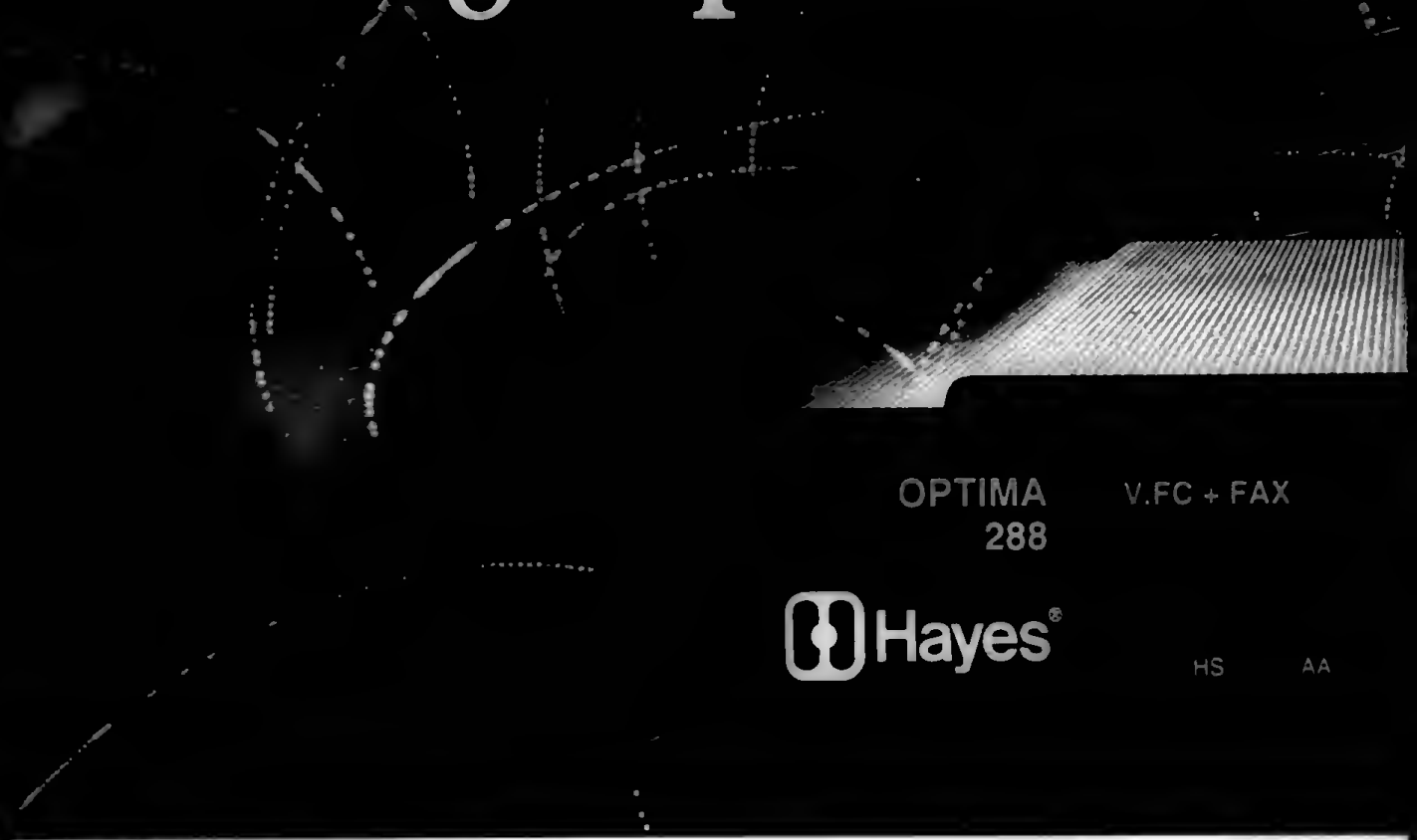

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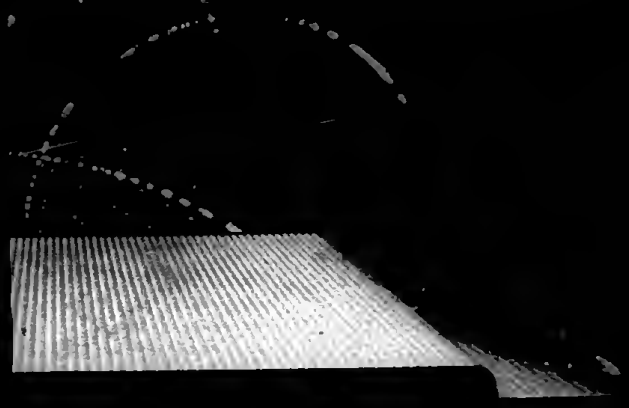

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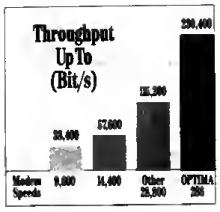

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Gun law mandates criminal database in 5 years

By Mitch Betts
WASHINGTON

When President Clinton signed the Brady Handgun Violence Protection Act last week, he set the clock ticking on a five-year deadline to build a national information system for conducting background checks of would-be gun buyers.

The biggest expected hurdle for building this criminal database is finding enough money for cash-strapped states to automate paper criminal records. The Brady bill authorizes $200 million a year in grants to help states do that, but it remains to be seen whether Congress will appropriate those funds.

Can the 50 states make the deadline?

"Five years will get us most of the way there, if Congress appropriates the money," said Gary R. Cooper, executive director at Search, Inc., a Sacramento, Calif., group of state information systems managers in charge of criminal records.

The new law requires a five-day waiting period for the purchase of handguns, but that provision will expire in five years and will be replaced by an "instant check" system. Gun dealers must use the system to see if a customer is disqualified because of a felony conviction.

Dealers who fail to use the federal system can be fined up to $5,000 and lose their gun-selling license.

The national system is likely to resemble Virginia's system, in which merchants telephone the state police agency, which in turn checks state and interstate computer records while the buyer waits at the counter for a decision. Virginia is experimenting with placing dumb terminals at high-volume gun stores for direct access to the system.

No sale
Since 1989, background check systems in California, Florida, Virginia and Maryland have blocked more than 47,000 attempted firearm purchases, according to a survey by *The Washington Post*.

The U.S. Department of Justice will choose the IS architecture of the interstate database within six months. The Search consortium and an influential legislator, U.S. Rep. Charles E. Schumer (D-N.Y.), said the system should piggyback on an existing but unfinished federal database called the Interstate Identification Index, which is a master index of the criminal names stored in state databases.

That master index, run by the Federal Bureau of Investigation, can be turned into the Brady system by "flagging" the names of convicted felons. But the index is incomplete because many states are unable to feed it data.

Time to automate

Search's latest survey found that only 25 states participate in the interstate index and only 15 states have fully automated their criminal files and name index. Four states — Maine, New Mexico, Vermont and West Virginia — have no automated criminal history files.

Moreover, states will have to get thousands of courts to transmit information on the disposition of their cases, as well as standardize data elements and formats. "The Brady bill assumes a greater degree of [data] compatibility and communication than really exists," said Raymond Foucault, president of OCS Technologies, Inc., a Pleasanton, Calif., software vendor specializing in criminal justice systems.

On the other hand, 16 states already have some system for presale background checks of gun buyers, so they are not far from complying with the new law. Existing state programs are not preempted if they are at least as strong as the federal law.

The statute also requires the Justice Department to write regulations governing the privacy and security of the national information system.

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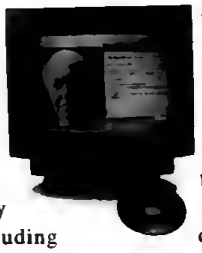

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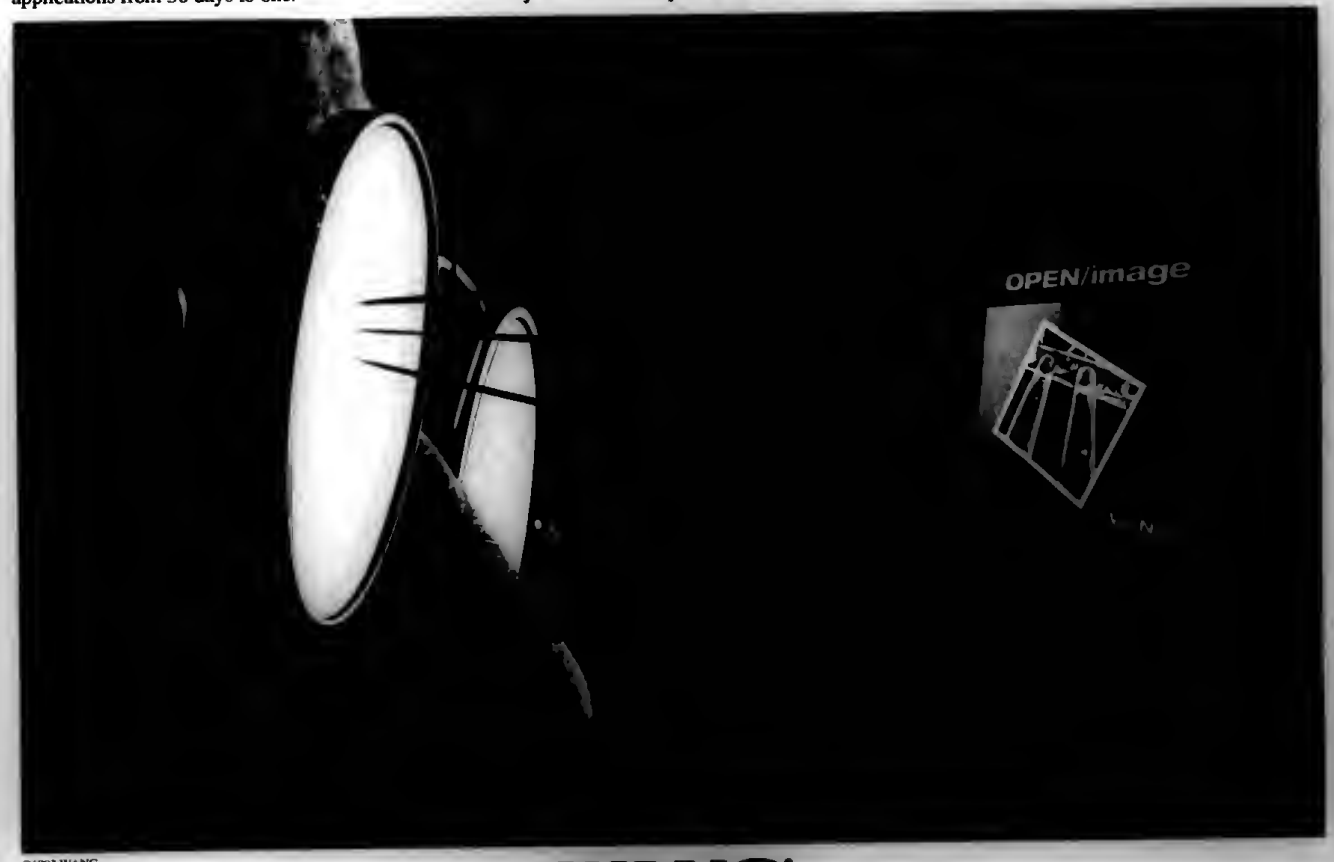

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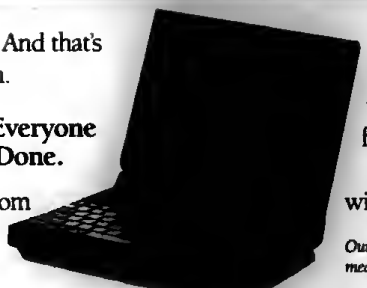

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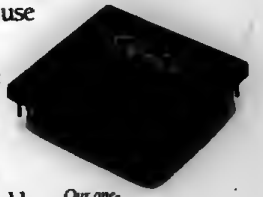

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Users upbeat on RISC-based Mac

New Windows-capable Quadra sets the stage until PowerPC debuts

By James Daly

When Apple Computer, Inc. starts shipping Macintosh PCs running the speedy PowerPC chip early next year, it may find an unusual source of enthusiasm — Windows users.

Apple set the bait last month when it introduced the Quadra 610 DOS Compatible, which runs Macintosh, DOS and Windows applications by means of an unusual pairing: a Motorola, Inc. 68040 chip and an Intel Corp. 1486SX chip on separate cards.

The Windows applications will still tap into the 486 chip, and Apple is somewhat hazy about whether Windows applications will have to be tweaked to run on the RISC chip. However, Apple claims that since the basic operating system and any Macintosh applications will be run on RISC, the advantage accrued by the Windows user is more CPU cycles for the Windows applications — particularly during number-crunching tasks and with graphics applications.

Welcome a board

When PowerPC upgrade boards become available next year, users will have a RISC machine that can run Windows, according to Apple. Until then, the box may especially appeal to users looking for a bilingual machine.

The 68040 serves as the springboard to the RISC-based PowerPC, with Apple and third-party developers expected to provide upgrade boards shortly after the PowerPC Macintoshes ship this spring. Pop in the new board and — voila — the Quadra 610 is a RISC machine that can run Windows. A RISC-based Sun Microsystems, Inc. SPARCstation can run Windows, but it is reportedly very slow.

Windows users say the added computational muscle of a RISC chip may be just the thing they need to carve through the power-hungry Windows environment.

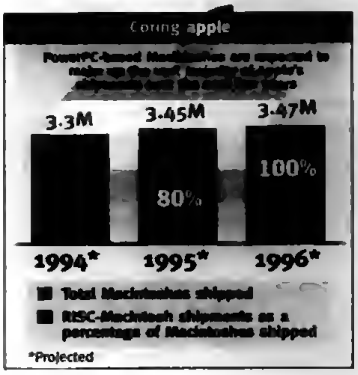
Windows bashing

"You can never be too rich, too thin or have too many CPU cycles," said Greg Feeler, who runs a network of Windows, DOS and Unix machines as an information systems manager at Employers Resource, Inc., an employee management firm in Boise, Idaho. "Windows is a dog. It's fundamentally very pathetic. Very slow."

If the Quadra 610 DOS Compatible "does everything they say it can do, I'd love to get my hands on it," said William Gibson, who runs a network of IBM PC clones as national support engineer at General Electric Medical Systems in Milwaukee. "I'm not a Mac fan, and I don't want to buy a Mac because everything I've got is DOS and Windows. But a RISC chip is a very potent lure."

But not everyone sees a benefit in a RISC-based Macintosh for Windows. "If they did it two years ago, we would have been interested," said Charlie Russell, system administrator at New United Motors Manufacturing, Inc. in Fremont, Calif. "But right now there's nothing that I can do on a Mac that I can't do on a PC. Wabi is a more likely alternative. I think you'll see a lot more Windows applications than [those] running on a Mac."

Pricing for the Quadra 610 DOS Compatible is expected to be less than $2,000 in the various outlets now carrying the Macintosh line. A 486 PC clone is priced in the $1,500 to $1,800 range. A PowerPC upgrade card is expected to cost $1,000 to $1,500, depending on its power. Thus, a PowerPC-equipped Quadra 610 could be bought for as little as $3,000, significantly less than the $5,000 price tag of many RISC workstations.



Source: "The Hartsook Letter"

IBM's recently unveiled PowerStation 250 workstation can also run Windows, but its $5,445 base price is high for most PC fans. Early next year, IBM will also roll out a PowerStation based on the PowerPC 601 chip that IBM officials said will be able to run DOS or Windows applications as fast as a 66-MHz 486-based PC. That will be accomplished through Intel x86 emulation technology developed by IBM and bolted onto Sun's Wabi Windows emulator.

Name your price

Although IBM has not established an entry-level price point for its PowerPC system, it is expected to be comparable to the Macintosh PowerPCs — in the $2,500 to $4,000 range. Doug Kass, an analyst at The Viewpoint Group, said an entry-level Macintosh could possibly cost as little as $2,000 (with monitor and keyboard included) if Apple really wants to drive the Macintosh PowerPC market fast in its early stages.

A cheaper RISC-based machine capable of running Windows could also be a very strong weapon in Apple's self-avowed war with Intel. "PowerPC could be a very serious competitor to Intel in the long run," Kass said. He explained that the price and performance of the PowerPC, when compared with the typical $5,000 price tag of a RISC workstation, should make it a very competitive alternative to a 486- or Intel Pentium-based PC.

However, Apple will also find itself competing against other purveyors of PowerPC systems. Kass suggested that Apple's edge may lie in underpricing its PowerPC competitors, but it remains unclear how Apple plans to differentiate itself in that sector.

Brokerage deploys distributed management

By Jean S. Bozman
SAN FRANCISCO

■ Charles Schwab & Co. is moving ahead with its pioneering distributed computing architecture, pairing software from Tivoli Systems, Inc. and Hewlett-Packard Co. to handle systems management and network management, respectively.

Schwab is among the first corporations to put the Open Software Foundation's (OSF) Distributed Computing Environment (DCE) into production, the OSF said. On Nov. 8, Schwab started up its first DCE "cell," a portion of a future nationwide network of distributed computing resources that can be tapped from any workstation.

The first cell has some 50 Sun Microsystems, Inc. workstations and several Sun SPARC 10 servers in Schwab's Phoenix office [CW, Nov. 15]. Schwab's DCE applications will then expand to seven sites nationwide, serving thousands of users.

Tivoli's Time Management Environment (TME) is being used as an "umbrella" for systems management applications at the Phoenix offices, said Michael Negatu, Schwab's director of systems integration. Tivoli last week said it had reached a two-year, $2.3 million agreement to provide the $750 million brokerage firm with systems management products and consulting services.

Schwab's first DCE site hosts a stock quotation application. On-line TME applications send network-wide registration data for user identifications and workstations to Unix file servers and distribute software programs throughout the DCE system, Negatu said.

Tool set immaturity

HP's OpenView, meanwhile, is being used to monitor all the workstations and Unix servers on the network. "They play together," said Jim White, Schwab's vice president of technical planning. He explained that a combination of several tool sets is needed to manage a distributed system, creating a patchwork far less mature than data center tool sets.

Management of the DCE depends on timely coordination of network resources and is built on several software layers. "You enter information in one place [in TME], and it's disseminated to the other products," Negatu explained. "As we move forward, users in a given cell will have their own profile available for quick log-on at any place" in the network.

That means that Schwab brokers could fly across the country, sit down at any local office and access their applications and data, just as if they were sitting in their home office.

Original plans called for Schwab to use the OSF/1 operating system, OSF's DCE and Posix-compliant Unix products [CW, April 20, 1992]. The OSF failed to deliver the Distributed Management Environment (DME) framework, which is being rebuilt, and failed to ship all of the promised DME functions, such as print services.

Replacement parts

So, while Schwab uses some DCE products, it uses Sun's operating system instead of OSF/1 and Tivoli's TME instead of the DME framework. It decided to use the Andrew File System software developed at Carnegie Mellon University in Pittsburgh instead of DCE's Distributed File System, and it uses Atrium Technologies, Inc.'s Dazel for distributed print services.

Tivoli was an early developer of the OSF's DME framework, although industry analysts said they believe OSF may never ship its framework [CW, Nov. 15]. Tivoli is now consulting with Schwab to forge links to other vendors' systems management applications.

New applications built by Schwab programmers may also need to reach into legacy systems to access mainframe data.

"There's some customization we're doing here," Negatu said. "There will be some bridging that needs to happen."

Networking in the U.S.

If Schwab's nationwide rollout of its DCE applications goes as planned, they will be used in seven regions nationwide by 1995. Among the key cities: San Francisco, Denver, Indianapolis and New York. Until now, Schwab's 5,000 end users have accessed data from a Hitachi Data Systems Corp. uni-processor mainframe in Phoenix, via IBM 3270 terminal emulation.

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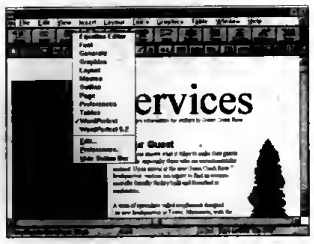

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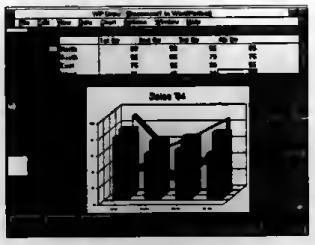

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In a pickle

Last week, the Russian who is responsible for preserving Lenin's body in rather remarkable condition, despite its being dead for 70 years, revealed his secrets.

It seems the Russian may have been motivated by the Kremlin's cutting of the preservation funding. Now he's willing to market his services to anyone who'll spend $250,000 to pickle the deceased.

I suggest he contract with the information technology industry to perform his magic on open systems computing.

Maybe it is a slight exaggeration to say that open systems is dead, or maybe reports of its death are premature. But if you read through our special report on the state of open systems (beginning on page 87) — a report based on our exclusive analysis of X/Open's worldwide open systems survey — you will conclude at the very least that open systems is, in the purist sense, dead.

Sick and tired of vendors' squabbles and the glacial movement of consortia-based standards efforts, users are redefining just what "open" really means. Guess what? Included in that definition are some curious features such as SNA, mainframes and Windows NT — technologies and products that would make open systems purists shudder.

How can this be? The Yankee Group's Howard Anderson summed up the situation thusly: "While users are entranced with the idea of standards, when all is said and done, they go back to what works." And what still works best for many of them is heavy reliance on things that look and feel quite proprietary.

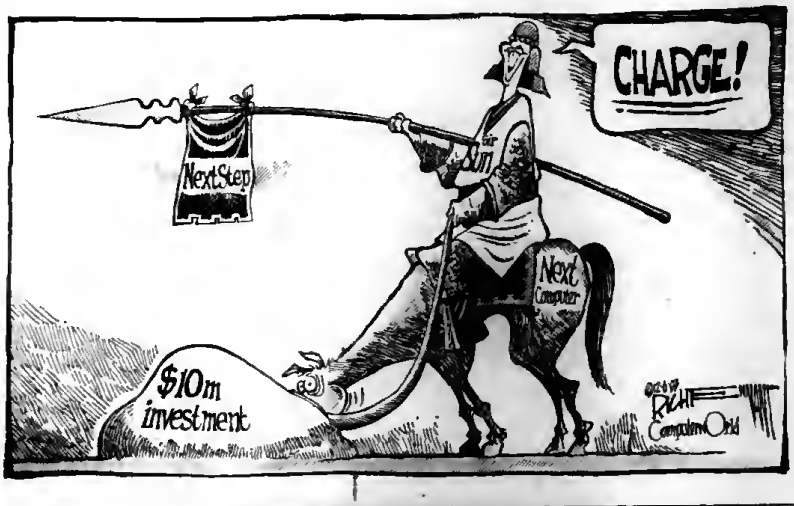
This is not such a bad state of affairs. After several years of some of the most torrid marketing blitzes ever witnessed, during which users were fed a steady stream of PC-wanderlust, a much more pragmatic customer has emerged. They know mainframes are here for the long haul and, no, mainframe is not a dirty word. They know that 30 years of large systems development and all the attendant network management and security built into that environment is not going to be replicated in the open systems and client/server worlds anytime soon. For heaven's sake, vendors can't even deliver something as simple as E-mail systems that can talk to other vendors' E-mail systems.

Maybe one day there will be a greater sense of unity and interoperability among the 25 versions of Unix floating around. Perhaps one day the vendor consortium called COSE will bring some order to the 1,170 API-related "standards" out there. Possibly Godot will finally show up.

In the intervening years, customers will continue to redefine what is open in order to suit their needs, because they and their organizations can't wait. This pragmaticism is destined to drive corporate computing for years to come.

Bill Laberis

Bill Laberis, *Editor in chief*



Software cure not worth the pain

Steve Epstein's "Taming wild software country" [CW, Oct. 11] brought to light many interesting points and not a few misconceptions on software quality.

He speaks against a subjective answer to the question, "How safe is this piece of code?" What is Mr. Epstein's magic number that he will use to judge that software is indeed safe? Mr. Epstein compared the lack of standards to the mostly well-defined standards in civil engineering.

His implication is that we can expect a similar type of standard to evolve for software engineering as it becomes more mature. But are civil engineering and software engineering fundamentally similar? Ensuring safety in a digital domain is inherently much more difficult. If a bridge can be deflected to the right a few degrees, suffering no damage, the civil engineer would reasonably expect it to behave safely when deflected similarly to the left. In digital systems there is no guarantee of symmetry like this. It is as though the software "bridge" is constructed of explosive bricks. The failure of one brick can detonate the entire bridge.

Mr. Epstein says, "The answer is to begin by implementing techniques from the disciplines of software reliability, software system safety and software risk analysis. ... " But no proof or rationalization is presented that these methods will actually improve software quality.

Much of the effort in software quality assurance goes into producing more documentation and to testing. But does more documentation really equal more quality?

Mr. Epstein suggests that "licensing of software engineers may also be part of the answer." Although blunders by individual programmers are often made, the really spectacular failures come from failures in management. Licensed or not, a team of engineers working 60 to 80 hours every week will eventually make mistakes.

I do agree with Mr. Epstein that the state of software quality needs improvement and is a serious matter of concern. Let's make sure the cure doesn't make the problem worse.

Robin Rowe
President
Rowe Technology
Redmond, Wash.

Not mad for RAD

Regarding "Leave analysis behind" [CW, Oct. 18], David Baum's contention that rapid application development (RAD) renders the need for regimented methodologies obsolete is ridiculous.

RAD may be fine for developing some small throwaway programs but fails miserably for building major enterprisewide information systems. RAD sacrifices system integration for development speed, pacifying the business problem for the moment but creating long-term headaches when the application has to be redesigned to work with other programs.

But instead of RAD, we call it "QAD" for "quick and dirty."

Tim Bryce
M. Bryce & Associates, Inc.
Palm Harbor, Fla.

Wanted: "Big picture" skills

Regarding "Think big picture for client/server" [CW, Oct. 25]: For every classified ad that uses terms such as "overall client/server architecture and methodology" or "technology planning" or "integrated business and technical skills," there are literally thousands that are looking for product- and vendor-specific skills.

Where are the jobs that require "big picture" and "conversationally fluent" skills?

Either they are all filled, since no one is advertising for them, or the need is not recognized.

I tend to think it is the latter. Unless we learn to put the cart where it belongs, the problem won't be fixed.

Carolynn Ranfile
Independent consultant
River Vale, N.J.

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The meaning of certification

Eli E. Hertz

Ideally, certification protects consumers. Certifications such as the UL seal on an electrical plug indicate a meaningful and acceptable standard of performance that is monitored on an ongoing basis. But sometimes certifications can be misleading and provide a false sense of security. That is the case with certification labels created by Novell.

Novell's certification programs have gained quick acceptance in the marketplace. People now perceive Certified NetWare Engineer (CNE) status as a qualifier for network specialists. Similarly, the Novell Independent Manufacturer Support Program (IMSP) product compatibility certificate supposedly ensures a smooth-running network. Few question the meaning or value of these certificates.

Employers and consumers don't always get what they expect when they hire or buy on the basis of a Novell certification.

The CNE designation has become the computer equivalent of an MBA. Most people have one; therefore, those who don't are at a disadvantage. Businesses even specify "CNE a must" in their ads because they feel this will attract the appropriate applicants.

There is a widespread impression that certificate holders can handle all network problems and all forms of maintenance. In fact, CNE certification addresses only one aspect of network support — the operating system software — and does not require a demonstration of hands-on skills. Candidates must pass only a series of on-screen tests to qualify.

Increasingly, employers are discovering that many CNE holders lack the skills needed to work with network hardware, cabling systems and applications software.

Novell has no incentive to publicize the limitations of its CNE program. Its CNE business is booming. The demand for courses pressured Novell to contract the training to Novell Authorized Education Centers and to expand the program by introducing three new certifications: Enterprise Certified NetWare Engineer, Certified NetWare Administrator and Certified NetWare Instructor.

Similar opportunities exist for Novell through its IMSP product certification program. Novell says it wants to encourage OEMs to integrate their products with NetWare. The cost of this encouragement can be exorbitant, however, averaging approximately $7,000 per computer system.

Getting less

Microsoft and IBM provide to OEMs, for free, preconfigured diskettes with which to conduct compatibility tests. Do you get more for your money with Novell? Actually, you get less.

A Novell sticker on a computer system means only the exact and specific configuration tested is certified. Any change in that computer system, such as revision to the system board, a different add-on board or a small update to software drivers or BIOS, voids the certification. The pace of change in the industry may render a specific configuration obsolete during the eight to 12 weeks it takes to receive a Novell certificate.

Just as employers expect CNEs to apply for network-related jobs, many purchasing managers require the Novell sticker on hardware they buy. People believe this guarantees compatibility. It's time to read the fine print on the certificate.

Hertz is founder of Hertz Computer Corp., maker of workstations and file servers, and the author of a number of industry-related books. His latest, *Now that I Have OS/2 2.0 on My Computer, What Do I Do Next?*, was published by Van Nostrand Reinhold.

Enterprisewide LAN E-mail still a dream

Patricia B. Seybold

Do you dream of growing your LAN E-mail systems to handle robust applications across your entire enterprise? Dream on. Are you planning to build E-mail bridges and applications that reach out to customers and suppliers? Don't count your blessings yet.

The good news is that LAN-based E-mail *is* growing up. The leading packages now run across multiple platforms and support international and de facto messaging standards. They also come with gateways that let you connect relatively seamlessly to host-based E-mail systems and external E-mail services.

Even the skirmishes among the leading players over which firm controls the messaging application programming interfaces for LAN E-mail have subsided so that, within a couple of years, you should be able to write corporate applications for project management, scheduling and work flow that will run across various LAN E-mail products.

The bad news is LAN E-mail products often are not robust enough to support the many thousands of users in large organizations. Important features are lacking — such as reliable end-to-end delivery in a global network, message tracking, certification of delivery and rock-solid security.

The use of multiple gateways also makes it problematic to send files and rich text without fear of corruption. And it is almost impossible to synchronize E-mail directories across an enterprise, particularly if you have products from more than one vendor.

LAN E-mail products are a long way from being able to support the large-scale applications you're daydreaming about.

It will take a couple of years before LAN E-mail products are up to the enterprise challenge.

In the meantime, assumptions can be dangerous. It's a mistake to assume, for example, that your LAN E-mail package will serve as an adequate "backbone" for all your LAN E-mail systems.

You'll also need directory services, and this is the area where I see most corporate E-mail task forces punting. There's good reason.

Many of the commercial directory services offerings are immature. Also, it is difficult to establish a single corporate LAN E-mail standard. And even if you do, chances are the directory services available from your vendor won't be up to the challenge of keeping those hordes of users in sync as they relocate, spawn new LANs, join and leave project teams and travel the world. Needless to say, it gets worse if you want to include customers and trading partners in your global directory system.

Be wary of promises of directory synchronization across mixed systems. This is the single most difficult problem in the industry. To solve it will require distributed database standards — something we're not likely to see soon.

NOTE: In my last column about how the Commonwealth of Massachusetts is using rapid, iterative development, a paragraph was omitted, which I feel was necessary to convey the accomplishments and professionalism of Comptroller Bill Kilmartin and his staff. The omitted text read: "How can a well-intentioned executive, no matter how visionary he is, make a dent in this tar baby of 20 years of fossilized practices? It helps if you have a good track record, as Bill does, in delivering return on investment on your projects. It also helps if you have put together a hot management team that is eager and willing to tackle the insurmountable."

Seybold is president of the Patricia Seybold Group in Boston. Her Notes address is Patrica Seybold @ PSOCG. Her Internet address is PSeybold @ MCImail.com.

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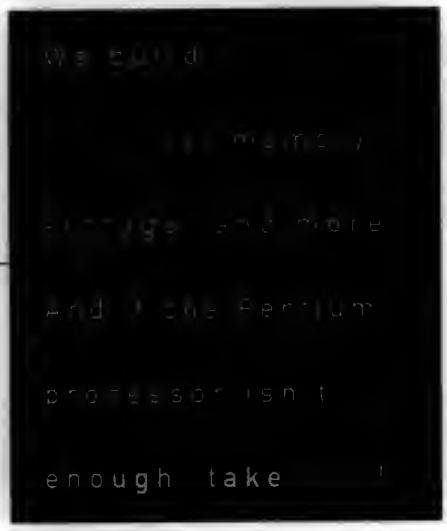

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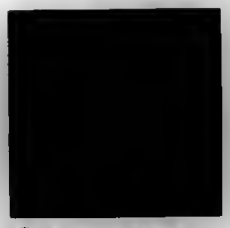

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Accounting software tallied up for NT

Microsoft takes little notice of Great Plains Software's latest contribution

By Ed Scannell

Accounting software is usually afforded the same level of respect an 8-year-old child gives brussels sprouts. You know it is necessary and probably even good for you, but it just is not very exciting.

Since the start of the PC revolution in corporate America, accounting software has not been able to get good public relations. The press and analysts have always found the spreadsheet, word processing and operating systems wars infinitely more interesting. Accounting software was something that, well, other people wrote about and analyzed.

That feeling appears to be alive and well as the industry enters the age of client/server computing.

Recently, Great Plains Software, Inc. released what it says is the first 32-bit accounting software application to support Microsoft Corp.'s Windows NT and Windows NT Advanced Server.

Typically, Microsoft's marketing machine would be quick to take note of such an event and aggressively promote the product at shows and in its literature. But Great Plains' software introduction of Dynamics C/S+ went relatively unnoticed by the boys and girls in Redmond, Wash.

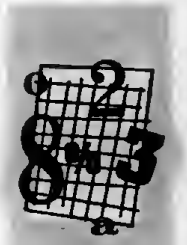
This, despite the fact that Great Plains developed Microsoft Profit, an entry-level, integrated accounting package that Microsoft exclusively markets and Great Plains supports, almost a year ago.

"Yes, we were somewhat disappointed when Microsoft was promoting some of the 32-bit applications available for NT in other categories but did not mention ours," said Raymond August, a vice president at Great Plains.

Doing it alone

While August and other company officials said Microsoft will come around in due time, they are not counting on it any time soon. Being based in the high-tech wilderness of Fargo, N.D., the company has developed a certain pioneer independence and sense of self-reliance.

Great Plains has built a $35 million to $40 million business, putting the privately held company among the Top 25 microcomputer software makers, according to "The SoftLetter," an industry newsletter in Cambridge, Mass.



Gaining momentum

In a 1992 survey conducted by International Data Corp., 71% of the respondents at U.S. mainframe sites said client/server architecture is now or will be important to their accounting system.

But as Great Plains enters the client/server market, it might not hurt to have Microsoft say a few nice things about its product. In this new arena, the company expects to go up against some experienced players such as market leader Oracle Corp., Dun & Bradstreet Software, PeopleSoft, Inc., Ross Systems, Inc. and newcomer The Dodge Group, that have established reputations at the high end.

But with prices on powerful hardware systems dropping, experience in developing Windows applications and the growing acceptance of client/server solutions, Great Plains officials said they believe the market is rolling their way.

"The accounting software needs of businesses of all sizes are changing with these market shifts. And I think we have adjusted our strategy to best address users' needs in this emerging market," said Doug Burgum, Great Plains president and chief executive officer.

Some observers agree, pointing to the company's network of some 3,000 value-added resellers (VAR), many of which are veterans at creating sophisticated client/server applications.

Almost all of the high-end competitors to Great Plains have sold their products directly to end users and only now are turning to VARs and systems integrators to help build an industry around their respective products, analysts explained.

Serious challenge

"They must be taken seriously by their competition just because of their resellers and customer developers. Most of them have already been doing real client/server stuff and most are really hot for this new product [Dynamics C/S+]," said Jeff Tarter, editor of "The SoftLetter."

Great Plains is pinning most of its hopes for success in the client/server market on its recently shipped Dynamics C/S+. The company is targeting the package primarily at midrange companies with revenue of roughly $25 million to $100 million a year.

Accounting, *page 42*

Smart-card technology used in lifesaving work

By Mitch Betts

When the ambulance crew arrives, the patient may be unconscious or incoherent and most family members too distraught to provide vital information about medical conditions, allergies and prescription drugs.

So the ambulance service in Midwest City, Okla., and six area hospitals have teamed up to deploy smart-card technology so emergency personnel have accurate patient data in an instant.

MediCard *gives emergency personnel accurate patient data in an instant*

The MediCard system was developed and installed by Advantage Data Systems, a smart-card systems vendor in Oklahoma City. Besides the plastic cards that store patient data on an embedded computer chip, the system involves Hewlett-Packard Co. 95LX palmtop computers, which have smart-card readers set in the PCMCIA slot, as well as desktop PCs with smart-card readers attached to the serial port.

The palmtop devices are installed in six ambulances, and the desktop readers are installed in six hospital emergency rooms and eight local pharmacies, explained Bob Riley, director of ambulance services at Midwest City Regional Hospital. At the scene of a medical emergency, responders insert the smart card into the palmtop readers to obtain data critical to split-second treatment decisions, he said.

The card-reading devices are made by Gemplus Card International Corp. in Gaithersburg, Md. Participants can update their med-

Smart card, *page 42*

Comdex/Fall '93

RISC PCs gain notoriety

By Michael Fitzgerald

LAS VEGAS

Apple Computer, Inc. Chief Executive Officer Michael Spindler used his Comdex/Fall '93 keynote address to declare that RISC is "the new desktop paradigm" [CW, Nov. 22]. That remains to be seen, but certainly RISC PCs were plentiful at the show.

Backers of the PowerPC, spearheaded by Apple, IBM and Motorola, Inc., were joined by proponents of Digital Equipment Corp.'s Alpha architecture and Mips Technologies, Inc.'s R4000 architecture to form a three-headed threat to Intel Corp. at the show. Related activities included the following:

- Spindler demonstrated a PowerPC Macintosh outperforming a Pentium-based system on high-level graphics software. Also, IBM showed sleek prototypes of its PowerPC hardware, including a PowerPC notebook.
- NEC Technologies, Inc. introduced its Image RISCstation and Express RISCserver. Based on the R4400, with 16M bytes of RAM and a variety of integrated features, the system is expected to sell for $3,749 when it ships in December.

The Express server, due out in February, will sell for less than $10,000, according to NEC officials. NEC, which also manufactures the Mips chip, announced lower-than-expected pricing of $80 per chip. It also announced a joint marketing and development agreement with start-up Netpower, Inc.

- Carrera Computer, Inc. introduced its Pantera Series I and II computers, with a 166-MHz and 200-MHz Alpha processor inside. Shipping "soon," Carrera, in Laguna Hills, Calif., will charge a base price of $3,995. Eight other vendors demonstrated Alpha machines at Comdex.
- DeskStation Technology, Inc. in Lenexa, Kan., demonstrated a sub-$3,000 NT PC, called the Tyne Series. It uses the R4600-Orion, a souped-up version of the R4400 made by Integrated Device Technology, Inc.

Officials outlined a plan to build two families each of notebooks and desktops around the Mips architecture. The Tyne series joins DeskStation's R4400-based Evolution line of RISC PCs, which start at $5,495.

- A Santa Clara, Calif., start-up called Sha-Biamm Computer announced its support for the Mips R4000 family, in both a family of Mips-based PCs and workstations and on its NiTro-VLB accelerator cards, which use the R4400 and the R-4600-Orion 100-MHz and 133-MHz chips.

imagine a desktop printer designed to keep everyone on track.

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PUTTING IMAGINATION TO WORK

digital

Accounting

CONTINUED FROM PAGE 39

Dynamics C/S+ is complemented on the high end by the company's Corporate Dynamics, an enterprisewide product capable of supporting all of the dominant SQL relational databases. On the low end is Dynamics, a LAN-capable graphical system with shipping versions for both Windows and Macintosh desktop systems.

Last month, Great Plains announced it would deliver Dynamics Release 2 by the middle of next year, which will target companies with 100 employees or fewer. This version will support Novell, Inc.'s Btrieve 6.1 NetWare Loadable Module and improved cross-module consistency.

A cool billion

Sales of client/server accounting systems are expected to reach $1 billion in 1997, up from $70 million in 1992, according to International Data Corp.

Smart card

CONTINUED FROM PAGE 39

ical information at the pharmacies, whose desktop systems have read/write capability.

Riley said there are some side benefits in the technology for the ambulance service and emergency rooms. Information from the smart cards can be fed directly into clinical and billing systems to reduce data entry, data errors and paperwork, he said.

Of course, the system depends on people actually carrying their smart cards at all times. Local residents obtain their smart cards from participating pharmacies and hospitals and pay a $30 fee for three-year membership in the program. Riley said the hardware is installed and the membership drive will start soon.

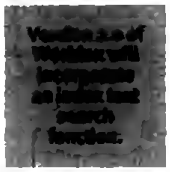
The ambulance service serves more than 100,000 residents in the eastern suburbs of Oklahoma City. Riley said, and he hopes to distribute 20,000 cards to people who are likely users, such as the elderly.

Document management

Start-up company adds text-retrieval engine

By Michael Vizard

World Software Corp., a start-up supplier of document management system software in Ridgewood, N.J., plans this month to ship Version 2.0 of its Worldox offering, which will incorporate an index text search function supplied by Odyssey Development, Inc. in Denver.



The addition of the index text search engine will give Worldox text-retrieval capabilities similar to those of rival products from vendors such as SoftSolutions Technology Corp. in Orem, Utah, and PC Docs, Inc. in Tallahassee, Fla.

However, World Software seeks to differentiate itself from its rivals by providing a document management system that does not take over all the applications attached to it, according to company President Tom Burke.

For example, while Worldox replaces the File Open and Save As dialogs in an application, it still allows users to upgrade their applications without having to wait for an upgrade to the Worldox product.

For this reason, the Federal Labor Relations Authority in Washington has adopted Worldox in three offices to supplement users of WordPerfect Corp.'s namesake word processor.

"These offices tend to use a lot of documents, and WordPerfect only supports eight-character file names. So with Worldox, we can have expanded file names across a library of documents," said Harold Kessler, director of information resources and research services.

"Price was a backdrop consideration. We wanted something that didn't take over our DOS directories," he said.

However, Kessler added that a lack of support staff at the authority is making it difficult for him to deploy Worldox further. "We only have four people supporting 240 people in multiple regions, so we're keeping the rollout limited. But we expect more offices to become interested in it over time," he said.

Worldox, which includes an application programming interface and viewers that allow users to preview documents before calling them, is priced at $229.95.

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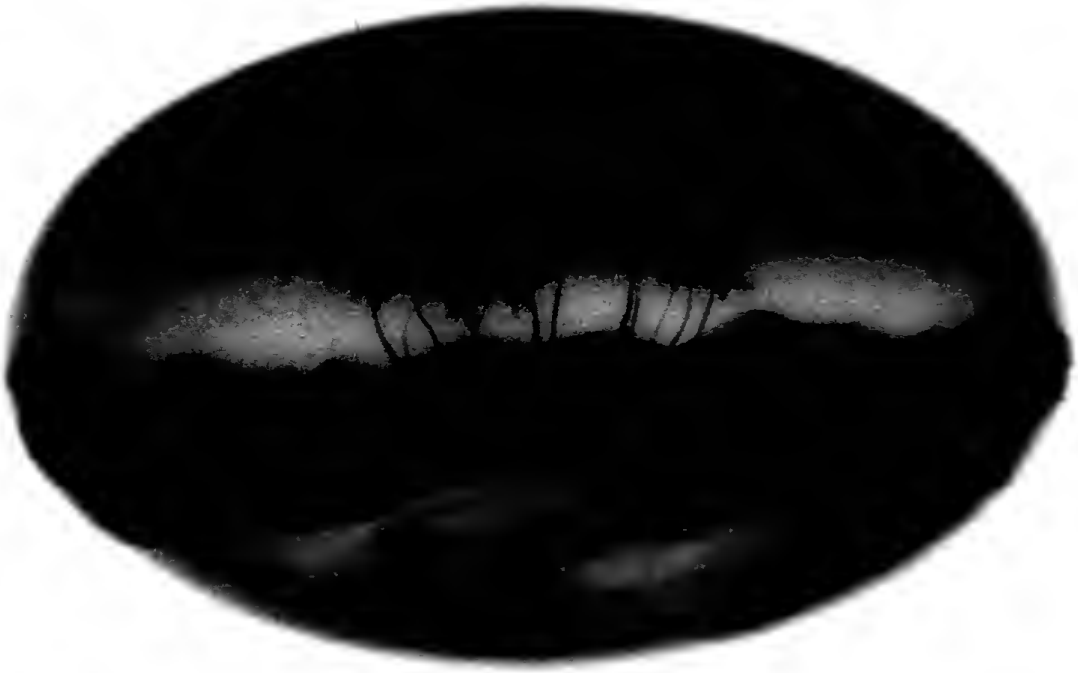

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As anyone who's ever been in the desert can tell you, things aren't always as they appear. Whether it's an oasis in the sand. Or a suite of application software in the office.

Unless you look very closely, for example, you'd swear Microsoft® Office was a revolutionary new way to use, manipulate and share business data through integrated software. When usable applications. All of which truly complete the desktop of every Windows™ user.

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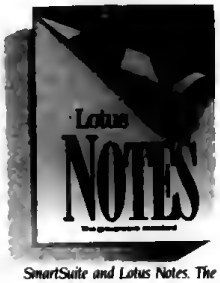
$299 COMPETITIVE UPGRADE	$348 COMPETITIVE UPGRADE

And while Microsoft claims Office is going to fully maximize cross-product integration and consistency, Lotus is already way down the road to achieving precisely that across all five applications. Sharing the same user interface. With common menus. And

MAYBE YOU'D BETT LOOK AT MICROSOF

in reality, Lotus® SmartSuite® achieved that distinction over a year ago.

A closer inspection will also demonstrate that not all of Microsoft Office's five applications are designed for general business users. And some new versions aren't yet available at all. Lotus SmartSuite, on the other hand, has five of the leading, award-winning, most



SmartSuite and Lotus Notes. The secret to integrating workgroups instead of just applications.

SmartIcons.® To say nothing of task-oriented functions that cross applications. Collect and Copy for instance. With a single click, it lets users gather data from 1-2-3® and Freelance Graphics® and combine it into an Ami Pro® word processing document.

Of course, you might be just as easily deluded into believing that Microsoft Office is work-

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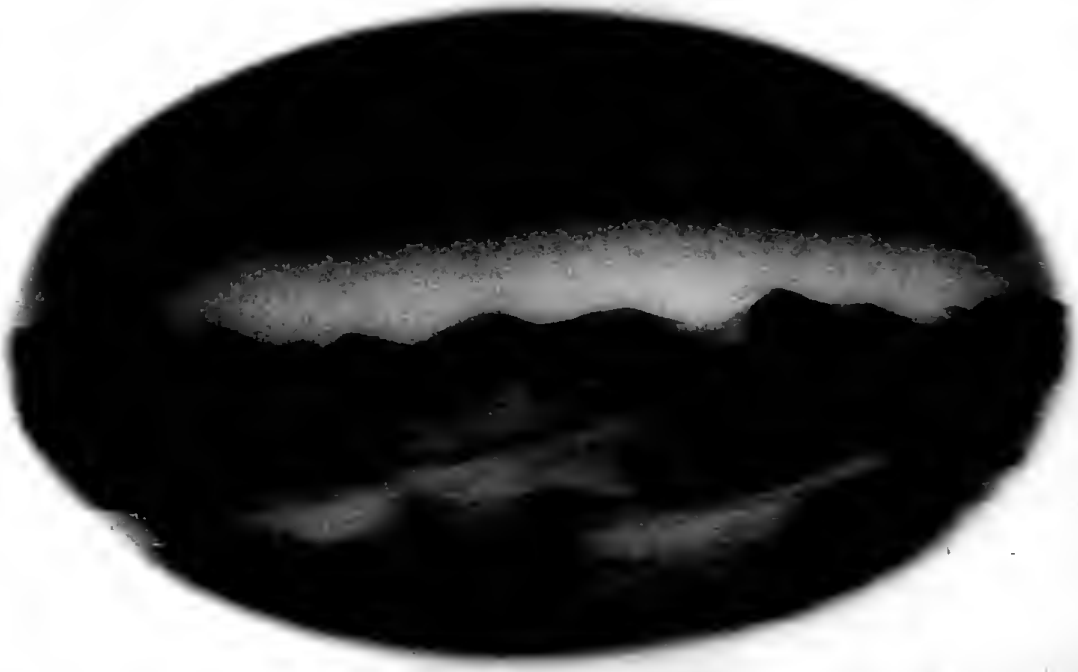

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group enabled. When, in fact, Office can only integrate applications, SmartSuite can actually integrate entire groups of people. With Lotus Notes® groupware, SmartSuite users can access, share, track and manage business data like never before. Not only can it be routed, it can be revised, stored and accessed concurrently by multiple users working in collaboration.

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Software

Intex Solutions, Inc. has introduced Forecast for Lotus Development Corp.'s 1-2-3 Release 4, a product that can be used for applications such as forecasting sales and expenses.

According to the Needham, Mass., company, the product was created specifically for 1-2-3 Release 4 for Windows users and includes pull-down menus, full mouse support and dialog boxes in a 1-2-3 environment.

Forecast for 1-2-3 Release 4 converts a user spreadsheet into a forecasting system, offering features that include time series analysis, statistical analysis, multiple regression analysis, seasonal adjustments, smoothing, filtering and other advanced forecasting techniques.

Forecast costs $165.

▶ *Intex Solutions*
(617) 449-6222

IntelligenceWare has announced Corporate Vision, a product designed for multidimensional data analysis.

According to the Los Angeles company, the product runs on Windows and implements a Hyperinformation Graphic User Interface, providing instantaneous, intuitive and graphic access to vital information required to monitor and control a business.

Features include fully customizable windows and dialogs, support for a large number of fields and dimensions and hypergraphs and hyperdata.

Corporate Vision costs $690 per copy.

▶ *IntelligenceWare*
(310) 216-6177

GST Software has announced DesignWorks 2 for Windows, drawing and illustration software.

According to the Falls Church, Va., company, DesignWorks 2 is a Windows-based technology that offers enhanced flexibility, speed and control.

Features such as custom shape tools, color features, text features, snapshot utility, keypad/foot utility, clip art and photo CD browser are included. Object Linking and Embedding support is also provided.

DesignWorks 2 costs $199.95

▶ *GST Software*
(703) 560-2364

Financial Decision Systems, Inc. has introduced MasterAgenda, a Windows-based system for corporate tax and financial filing, tracking and analysis.

According to the Agoura Hills, Calif., company, MasterAgenda can track, manage and analyze target dates pertaining to filings or events in the treasurer's office and legal departments.

MasterAgenda offers a Windows-based graphical user interface for ease of use. A query module provides instant access to all filings and related activities, enabling users to view, define and analyze data from a variety of perspectives.

A single-user version of MasterAgenda costs $795. The networked version is priced at $1,295.

▶ *Financial Decision Systems*
(818) 706-2000

Octel Communications Corp. has introduced DecisionPro, a Windows-based voice processing reporting tool that combines a Windows graphical user interface with an industry standard relational database and a report writer.

According to the Milpitas, Calif., company, the product provides users with system information and report customization capabilities.

User profiles and event statistics can be downloaded from an Octel voice processing system and stored in a standard database on the user's desktop PC.

DecisionPro costs $1,000 per client.

▶ *Octel Communications*
(408) 942-6500

PenWare, Inc. and **Sharp Electronics Corp.** have introduced the PenCell spreadsheet software card designed for the Sharp line of pen-based Wizard electronics organizers.

According to Palo Alto, Calif.-based PenWare, the card enables users to access, update and utilize spreadsheet information on their pen-based Wizards.

By touching on-screen icons, users can enter data, run spreadsheet scenarios and do simple budgets and forecasts.

Other PenCell features include manipulation of data through pen gestures, multiple levels of Undo and Redo operations, drag-and-drop functions for copying and moving cell data and a shortcut entry method for common formulas.

The PenCell IC card costs $229.99.

▶ *PenWare*
(415) 858-4920

Scitor Corp. has announced Project Scheduler 6 for Windows, a project management system.

According to the Foster City, Calif., company, the product supports all aspects of project planning, tracking, reporting and analysis.

Project Scheduler 6 employs object-oriented programming technology and offers an interface designed to streamline project planning with user-configurable spreadsheets, an unlimited Undo/Redo option, graphical Gantt chart dependencies and tool bars for quick access to functions and views frequently used by project managers.

Project Scheduler 6 costs $695.

▶ *Scitor*
(415) 570-7700

Computervision Corp. has announced the Revision 6.0 DOS-Extended version of Personal Designer, its two-dimensional/three-dimensional PC computer-aided design software.

According to the Bedford, Mass., company, this version offers more than 100 customer-requested productivity enhancements.

Features include a graphical user interface that allows intuitive interaction via raised buttons, pop-up menus, context-sensitive assist text, relocatable dialog boxes and an expanded Non-Uniform Rational B-Spline.

Personal Designer is compatible with MS-DOS Versions 5.0 and 6.0.

The product costs $3,995.

▶ *Computervision*
(617) 275-1800

Jensen-Jones, Inc. has introduced Commence Start-Up, an entry-level version of Commence 2.0, personal information management software that operates under Windows.

According to the Red Bank, N.J., company, Commence 2.0 offers users an easy way to view, organize, store and share information in workgroups.

Commence Start-Up is a stand-alone version of Commence 2.0. Users can organize contacts, manage and automate tasks and projects, dial telephone numbers through a PC, create customized views of information and maintain a calendar with a drag-and-drop scheduler.

Commence Start-Up costs $49.95.

▶ *Jensen-Jones*
(908) 530-4666

Hardware

MiniStor packages *include one unit, software drivers and a user manual*

MiniStor Peripherals Corp. has announced a 128M-byte, 1.8-in. hard drive and DockIt Socket, a product that adds a PCMCIA slot to existing desktop PCs.

According to the San Jose, Calif., company, the two-platter drive uses glass media and can be used as a high-capacity removable storage device or a built-in drive for primary storage in portables.

The product holds up to 15,000 pages of text, graphics, multimedia presentations, spreadsheets and other data.

The drive features 16 millisecond average seek times, data transfer rates of between 11M and 22M bit/sec., 6.67 average latency and 250,000 hour mean time between failures.

DockIt Socket lets users transfer files from portables to desktop systems without a cable link or docking station.

The 42M-byte PCMCIA drive costs $499, the 85M-byte drive is $549, and the 128M-byte drive is priced at $699. DockIt Socket's suggested retail price is $249.

▶ *MiniStor Peripherals*
(408) 943-0165

S3, Inc. has introduced S3 Vision, a family of multimedia-enabled, 64-bit graphics accelerators, a companion video accelerator and a peripheral chip.

According to the Santa Clara, Calif., company, the products provide users with more than double the power of their predecessors and offer more color depth and the ability to incorporate video.

The 64-bit Vision family includes two multimedia-enabled single-chip graphics accelerators, a companion accelerator called the S3 Vision/VA, the dynamic random access memory-based S3 Vision864 and Video RAM-based S3 Vision964.

The single-chip, S3 Vision/VA video accelerator operates with Vision964-based systems. The S3 SDAC peripheral chips support high resolutions.

The S3 Vision864 costs $45 per 1,000 parts, and the S3 Vision964 is priced at $75 per 1,000 parts. S3 Vision/VA costs $75 per 1,000 parts, and the S3 SDAC, 110 MHz and S3 SDAC, 135 MHz are priced at $8.81 and $10.56 per 1,000 parts.

▶ *S3*
(408) 980-5400

Hewlett-Packard Co. has introduced the HP DeskJet 310 printer for notebook PCs and the HP DeskWriter 310 printer for Macintosh PowerBooks.

According to the Palo Alto, Calif., company, the printers offer 300 dot-per-inch resolution for black or color, text and graphics. The printers can be powered by a battery or an AC adapter, and they use HP-developed thermal ink-jet technology.

Each printer weighs approximately 4 pounds and costs $379.

▶ *Hewlett-Packard*
(415) 857-1501

Olivetti North America, Inc. has introduced Quaderno 33, a high-powered version of its Quaderno subnotebook.

According to the Spokane, Wash., company, the product is an ultralight PC designed for users who need a portable computer with the power and capabilities of a desktop system.

Quaderno 33 comes equipped with 4M bytes of memory (expandable to 12M bytes) and a 60M-byte drive with an optional 120M bytes.

Preinstalled software includes Windows 3.1, MS-DOS, Microsoft Corp.'s Works for Windows and Lotus Development Corp.'s Organizer.

A Quaderno 33 package costs $1,899.

▶ *Olivetti North America*
(509) 927-5600

Lexmark International, Inc. has introduced six desktop printers.

The IBM ExecJet II 4076 printer features optional advanced flash memory scalable fonts and 600-by-300 dot-per-inch printing.

The IBM 4037 5E page printer employs Lexmark's electrophotographic print engine and offers graphics at up to five pages per minute.

The IBM 2300 Plus Series of nine- and 24-wire dot matrix printers consists of four models that were designed for customers who require extra reliability in printing multipart forms and labels.

According to the Lexington, Ky., company, the printers comply with the Energy Star Printers program.

Prices range from $349 to $799.

▶ *Lexmark International*
(606) 232-2000

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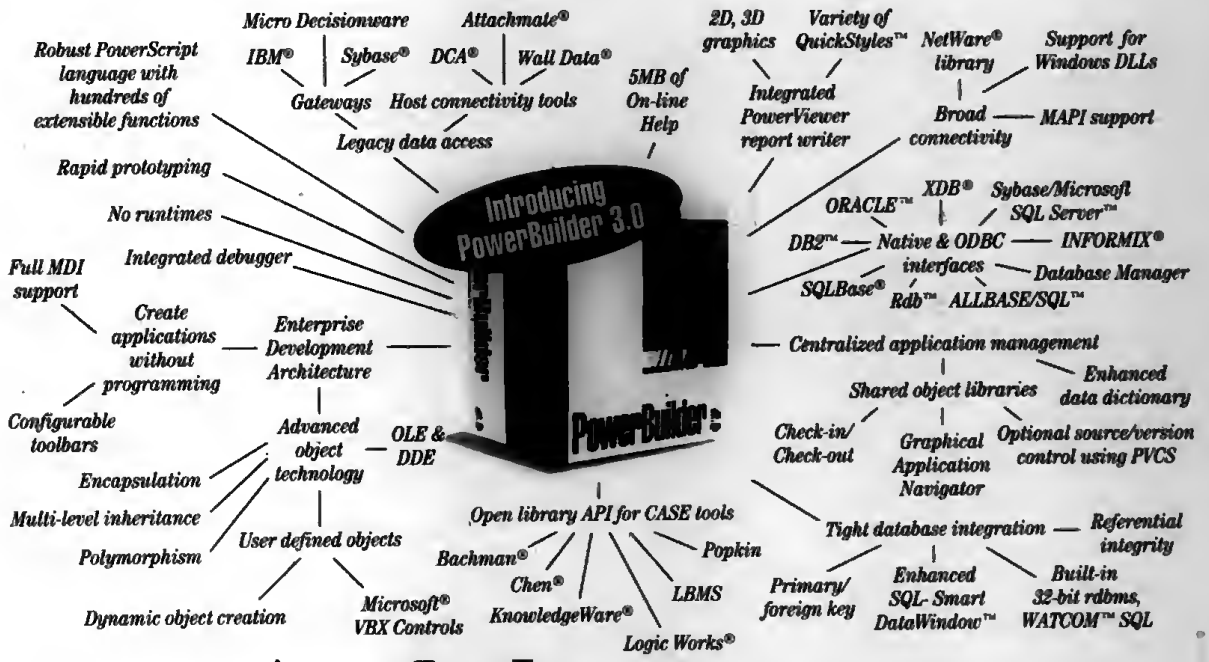

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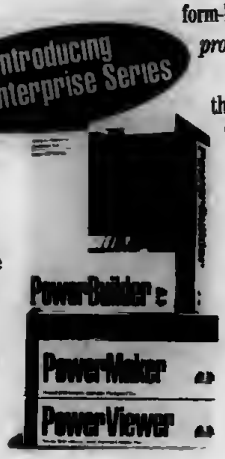

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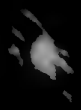

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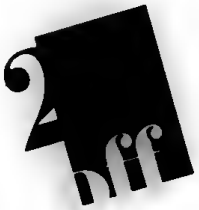

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New tools create an open Notes

By Michael Vizard

Lotus Developmeot Corp. will move this week to shatter the image of its Notes environment as a closed system when it announces a set of alliances with leading providers of application development tools at its Lotusphere conference in Orlando, Fla.

Among those vendors will be Information Builders, Inc., Informix Software, Inc., Powersoft Corp., the Ingres Products Division of The ASK Group, Inc. and Revelatioo Technologies, Inc. All are expected to deliver Notes support in the first half of 1994. Meanwhile, discussions with Oracle Corp. are ongoing.

"A lot of corporations have the perception that Notes is a closed proprietary environment. Having these tools will go a long way to changing that perceptioo," said Randal Zahora, president of Workgroup Productivity Corp., a consulting firm in Oak Brook, Ill.

Better tools for linking

In general, these agreemeots will shore up the Notes application development environment, which is hampered by a lack of graphical client/server tools, and give developers better tools for linking Notes with SQL databases.

"We'd expect to see a much cleaner two-way data flow. Right now there are batch products, but for real-time exchange you have to go with the Notes API, which is not as strong as we

Notes tools, *page 56*

E-mail integration

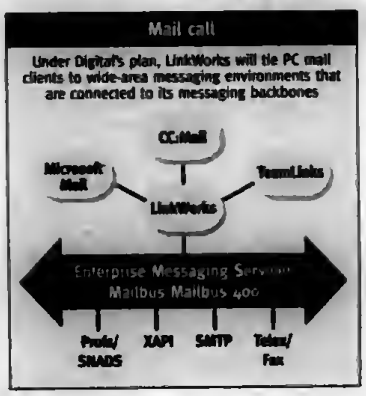
LinkWorks lacks key link

By Craig Stedman

Digital Equipment Corp. plans next year to add froot-end support to its LinkWorks workgroup integration software so it can work with leading PC mail packages. That key capability is missing from the first LinkWorks release, scheduled to ship this mooth.

Ronni Marshak, editor in chief of the "Workgroup Computing Report" poblished by Patricia Seybold Group in Boston, described the absence of direct support for Microsoft Corp.'s Microsoft Mail and Lotus Development Corp.'s CC:Mail as LinkWorks' main flaw.

"I'm not sure how useful it is without mail integrated into it," Marshak said. "If people are already nsing CC:Mail or Microsoft Mail, they're not going to be willing to go backward on functionality." LinkWorks will be "much more attractive" once it can work with those packages, she added.



Users looking for more

"The closer it looks to the things that people are using, the better it will be," agreed Michael Frow, vice president of credit at Bank of Montreal's U.S. operations in Chicago. The bank is implementing LinkWorks in its corporate banking department, where Microsoft Mail is the dominant mail package.

Dilip Phadke, LinkWorks group marketing manager at Digital, said the next release of the workgroup product will tie directly to both Microsoft Mail and CC:Mail. Digital's own TeamLinks mail software will also be supported in that release, which should be ready by "approximately summer," Phadke said.

Initially, LinkWorks has to go across Digital's Mailbus or Mailbus 400 messaging backbones and pass through gateways to hook up with the PC mail packages. It relies on a native X.400 mail client for now, although support is also included for Digital's VMSmail product and the Unix-oriented Simple Mail Transfer Protocol (SMTP).

Not fully rounded

Phadke insisted that the mail capability "is not as limited as some people think it is." However, other analysts agreed with Marshak that LinkWorks will not be a fully rounded product until Microsoft Mail and CC:Mail can be accommodated in a more seamless fashion.

"If mail is not one of the things you can link np to easily at first, it would be a knock" against LinkWorks, said David Yockelson, a research analyst at Meta Group, Inc. in Westport, Conn. "You want to play in whatever environment you're used to," he added.

Native X.400 is much more complicated than packaged

LinkWorks, *page 53*

Oracle, Novell pact aids DBMS on networks

Software bundle seeks to simplify administration of Oracle 7 on NetWare

By Kim S. Nash

The bundling of Oracle Corp.'s database with Novell, Inc.'s NetWare and UnixWare operating systems is more of a marketing pact than a technological advancement, observers said. But the packaging is expected to offer some advantages in terms of deploying Oracle 7 databases over networks.

As NetWare gains ground in client/server settings, critics have charged that products from Oracle and other relational database makers are difficult to monitor and maintain over a LAN. OracleWare seeks to change that. Packaging the database with NetWare — and UnixWare later in 1994 — is a stab at simplifying the tasks of installing and administering Oracle 7 on a LAN.

Meanwhile, Sybase, Inc., Informix Software, Inc. and The ASK Group, Inc. have all announced that NetWare Loadable Modules (NLM) supporting NetWare 3.12 and NetWare 4.0 will be available for their latest databases during the same time frame.

"There isn't much difference between an NLM and OracleWare, except the single-point support," said Wayne Kernochan, an analyst at Aberdeeo Group in Boston. "It remains to be seen whether OracleWare will truly be easier to support over Novell because of this bundling."

Shipping this week

Novell and Oracle have promised to ship the first iteration of OracleWare, a database and network operating system bundle, this week to NetWare resellers. Users should be able to get hold of the product two weeks from now, the firms said.

Users will also be able to install Oracle 7 and accompanying tools directly from existing NetWare consoles. That means the database will be easier to administer and maintain because users monitor it from the network operating system level with a single view.

OracleWare is aimed at department-level client/server setups. Some observers see OracleWare as a thrust to Microsoft Corp.'s parry of a low-priced SQL Server database for Windows NT sold through resellers.

Tools bundled

Oracle Office, an office automation suite, and Oracle Glue, a tool to connect the Oracle database with various front-end query and development products, are also part of the various OracleWare bundles.

The price is . . .

OracleWare for NetWare 3.12 is priced at $3,095 for a five-user version.

Microsoft's $1,495 price tag for a low-end SQL Server for NT setup "should be a big concern for Oracle and other database companies," said Michael Corey, president of the International Oracle Users Group.

Indeed, database pricing has to give way next year as NT installations grow, said Bill Shattuck, an analyst at Montgomery Securities in San Francisco.

OracleWare — sold indirectly and aimed at smaller users — partly addresses Microsoft's advances, according to Shattuck.

However, observers noted that a factor in OracleWare's favor is that users rely on Oracle for primary technical support — even for NetWare or, eventually, UnixWare questions.

Meanwhile, Novell resellers are learning the ins and outs of Oracle products so that they can answer some base-level database questions.

NLM questioned

Announced in June, various OracleWare bundles are slated for staged release, with a NetWare 3.12 edition due out in two weeks. A UnixWare edition is expected by first-quarter 1994, to be followed by a NetWare 4.0 version by midyear, the companies said.

Some users maintain that LANs lack the power and reliability of a host-based system for large applications, and therefore they are uninterested in either NLMs or OracleWare.

"You'll never get an NLM to perform as well as a database on a host," said Ira Kirschner, director of technology services at J. J. Kenny Co. The New York financial firm intends to switch most of its NLM applications over to a multiprocessing machine from Sequent Computer Systems, Inc., he said.

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Digital's LinkWorks: Missing key link

CONTINUED FROM PAGE 51

mail products, Marshak noted. "X.400 is a horrible environment for users," she said. "It has all sorts of codes that don't mean anything to anybody except a mail guru. You need a mail front end to hide all that stuff."

About 150 of Bank of Montreal's 1,150 corporate banking employees are using the X.400 mail client as part of the bank's LinkWorks installation, Frow said. X.400 provides "lots of flexibility and very powerful capabilities," such as conditional routing of messages, he added. "But the price you pay for power is complexity, obviously."

Users like functionality

While Microsoft Mail is not as robust as native X.400, employees "are very comfortable and happy with its functionality," Frow said.

As a result, Bank of Montreal is interested in using it as a front end into the X.400 mail engine in LinkWorks. "A hybrid is definitely what's required," he said.

Conrad Wiser, data center manager at Martin Marietta Corp. in King of Prussia, Pa., said mail "is always a concern" for his users.

"The better coordinated everything is from the start, the easier it would be to integrate into our environment," added Wiser, who looked at LinkWorks but has not yet committed to using it.

Beyond the initial mail shortcomings, analysts have a generally positive view of LinkWorks.

"Digital is a lot clearer about the whole workgroup market than it used to be," Marshak said. "I would not go out and buy LinkWorks yet, but the product has potential."

Can users cope with little to no control?

A thorny issue that Digital and potential customers face with LinkWorks is how much control individual users should have over their desktop environments.

The balance of power is weighted toward systems administrators for now, but analysts said that goes against the workgroup grain.

"There's typically a demand for freedom in workgroup settings, and [LinkWorks] doesn't allow for that," said Rosmi Marshak, an analyst at Patricia Seybold Group in Boston.

"Desktop users have absolutely no power to configure anything or decide anything," Marshak said.

"It's kind of at the opposite end of the Lotus Notes spectrum, where everyone can collaborate freely," added David Yochuison, a research analyst at Meta Group. He noted, however, that the top-down approach may be the right one for clerical-oriented applications such as claims processing.

Dilip Phadke, LinkWorks group marketing manager, said LinkWorks has built-in flexibility for allowing users to have some say over their setups, but the power to provide access to those features resides with the systems administrator.

"It's really the choice of the customer," Phadke said.

User manipulation of LinkWorks "is a tough issue to deal with," acknowledged Michael Frow, vice president of credit at Bank of Montreal's U.S. operations in Chicago.

According to Frow, "There's always this paradox between central control and empowerment."

Giving too much control to individuals could make it hard for users to log on to their desktops from other PCs, which is one of the bank's key goals with LinkWorks, Frow said.

The bank, therefore, has a standard environment, but it provides some flexibility and does not shut off access to the Windows program manager, he added.

On the other hand, the States of Guernsey police department in the UK expects to "take a pretty strict approach," said Inspector Mike Barrows.

"One of the nice things about LinkWorks is the ability to do that," Barrows continued. "The system administration capabilities are pretty powerful."

—Craig Stedman

Briefs

New backup software

IBM's Storage Systems Division said its new versions of software to back up and recover files on the RS/6000 and OS/2 platforms, will extend its Adstar Distributed Storage Manager (ADSM) server software to both RS/6000 and OS/2 machines. The original versions ran on IBM's VM and MVS mainframes. Now, ADSM can automate backup and recovery of geographically distributed data files. Among the clients supported are a variety of Unix workstations, OS/2 and DOS PCs and Macintoshes. The OS/2 server software is priced from $1,500 for 10G bytes of managed data, and the RS/6000 version is priced from $3,750 for 25G bytes of managed data.

Testbed chooses Earth

Hewlett-Packard Co. said the National Information Infrastructure Testbed has chosen the Earth Data System environmental research software, co-developed by HP and Ellery Systems, Inc., for transparent access to heterogeneous servers and real-time application on HP workstations.

Go with the flow

FileNet Corp. in Costa Mesa, Calif., will market its document imaging and WorkFlo software to IBM RS/6000 users as an AIX application. FileNet said users can license the software from FileNet or IBM.

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Database query tools

Dimensional bolsters tools with report writer

By Michael Vizard

■ Dimensional Insight, Inc. in Burlington, Mass., has enhanced its CrossTarget database query tools with a customizable report writer, called the Reporter, and a set of interfaces, called the Selector, that link its tools with SQL databases.

Aimed primarily at giving professionals access to data that has been moved from a mainframe database to a smaller engine supporting multidimensional analysis, the CrossTarget tools also include a facility called Diver, which allows users to do drill-down data analysis. Another capability, called the Data Integrator, allows users to link queries across dissimilar databases.

Taken together, the Dimensional Insight tools let information systems managers download production data to a separate server engine, precluding end-user queries from slowing the performance of the transaction processing system with ad hoc queries, the vendor said.

No slowing down now

For example, Vetrotex Certained Corp., a fiberglass manufacturer in Wichita Falls, Texas, has deployed CrossTarget on a Macintosh server that is linked to an IBM mainframe.

Every morning, the company downloads data from the mainframe, against which 20 to 30 engineers and other personnel run queries.

"Improving performance as part of a downsizing project was a huge issue for us," said MIS manager Alan Brinkley.

"The performance is excellent. Anything that takes more than a second means we have a network problem. And we're running queries against over 10,000 records," he said.

According to Dimensional Insight President Fredrick Powers, the company is looking to combine the multidimensional database functionality of an executive information system, which traditionally has supported only canned queries, with that of a decision-support system featuring ad hoc queries.

More flexible

As part of that effort, Dimensional Insight has created a server engine that can either be deployed on the same system as the company's primary database or on a separate server.

Powers argued that his company's approach is more flexible than deploying multidimensional databases that have larger amounts of overhead and require more systems management to create preprocessed queries.

CrossTarget engines and tools run on Macintosh and Digital Equipment Corp. OpenVMS systems. A Windows version will ship this quarter, and a Unix version will be available in early 1994.

Pricing averages about $1,200 per client, depending on configuration.

Notes tools

CONTINUED FROM PAGE 51

would like it to be," Zahora said.

"Our world has been expanding from Notes to the corporate databases for a long time now. It's very clear Notes won't stand by itself," added Ron Beck, senior director of technical services at Synetics Corp., a consulting firm in Wakefield, Mass.

Earlier this year, Lotus addressed these same issues through a pact with Gupta Corp., which announced it will deliver Notes support for its tools in the third quarter of 1994 [CW, Oct. 25].

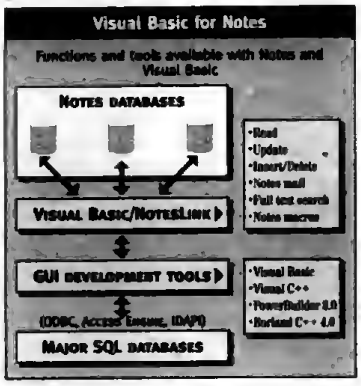
Brainstorm takes lead

Since then, Brainstorm Technologies, Inc. in Framingham, Mass., has announced it will deliver next week an interface that allows applications written with Visual Basic to run on top of Notes [CW, Nov. 1]. Lotus plans to deliver its own application development environment, called Notebook, in 1994. Based on Lotus' forthcoming LotusScript derivative of Visual Basic, the Notebook offering is intended to give Lotus a rival offering to Microsoft Corp.'s Visual Basic.

But early adopters of Brainstorm's VB/Link report they can no longer wait for Lotus to deliver Notebook, which Lotus began promoting earlier this year.

"We'll have to wait and see about Notebook. So far, it's vaporware, and we've given up hope on it," said Greg Burnett, a project manager at Waste Management of North America in Oak Brook, Ill.

Instead, Burnett said he plans to use VB/Link to build electronic forms in Visual Basic that can read and write to a Notes database.



"Visual Basic will allow us to simplify the user interface for Notes and allow us to build some types of forms that we can't build now. We won't replace all our Notes applications with Visual Basic ones, but for some types of applications Visual Basic makes more sense," Burnett said.

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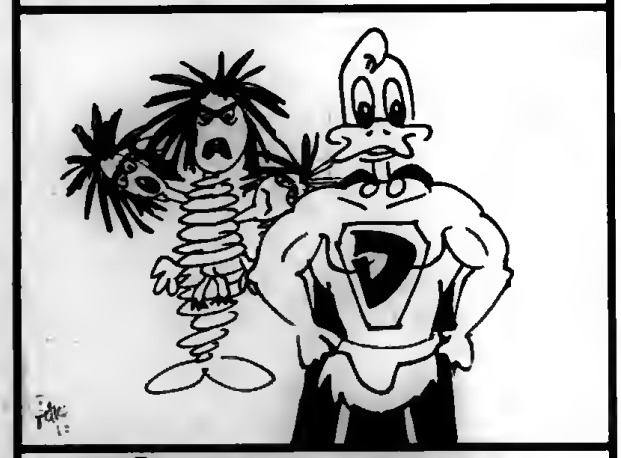

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Cambex Corp. has introduced the Cambex Certainty 6500-28, a 128M-byte memory card.

According to the Waltham, Mass., company, the product allows users to double the capacity and extend the life of every IBM RS/6000 computer that uses IBM's HD-1 memory technology, and it is fully compatible with all RS/6000 computers that use IBM HD-1 memory technology.

The Cambex Certainty 6500-28 can be swapped card-for-card for the IBM technology.

The product is priced at $19,500 in single quantities.

▶ *Cambex*
(617) 890-6000

Wyse Technology, Inc. has announced the WX series, a family of high-performance RISC-based color and monochrome X terminals.

According to the San Jose, Calif., firm, the WX series, which is based on the Mips Technologies, Inc. R3000 processor, offers 1,280- by 1,024-pixel display resolution and 64M bytes of display memory.

The WX series consists of three color models available in 15-, 17- and 19-in. displays and two monochrome models with 17- and 19-in. displays.

All of the systems are equipped with Ethernet interfaces supporting standard Ethernet protocols, including TCP/IP and Digital Equipment Corp.'s DECnet.

Prices range from $2,095 to $3,995.

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Source: Datapro Information Services

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	Cost	Complexity	Products Required on Mainframe	Communication Protocol
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Oracle	$170,000	Three Products: SQL Connect, SQL Net, Protocol Driver	Yes	Proprietary
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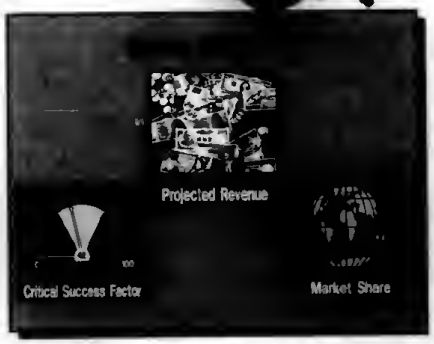

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EICON TECHNOLOGY

Sun Life walks down/upsizing line

By Joanie M. Wexler and Stephen P. Klett Jr.
WELLESLEY, MASS

Early this year, networking officials at Sun Life Assurance Co. of Canada's U.S. headquarters realized they needed to rein in a proliferating mass of LANs. The LANs were springing up willy-nilly and creating slow network response times, an unmanageable tangle of wires and a generally nonscalable network environment.

So the $31 billion insurer embarked on a $1 million, 12-month project to revamp its network infrastructure, which is now being challenged to support an influx of client/server applications.

The old unstructured cabling setup "wouldn't allow the network to be redesigned. There were no records as to what [wires] went where," explained John A. Kruk, telecommunications and network services officer.

Three-tiered effort

The thrust of the overhaul has been to better manage resources in three ways: balance processes appropriately between LANs and the corporate mainframe, implement smart switching hubs that allow information systems to reconfigure LANs on the fly and pare communications protocols and equipment (see story page 63).

Previously, by allowing users to link to servers as they saw fit, the firm was trying to run "a Minuteman army with West Point precision," Kruk said. "What we got was a ball of yarn all tangled up."

To untangle the network, Sun Life replaced dumb IBM Token Ring wiring concentrators with 17 Bytex Corp. Series 7700 smart hubs. The hubs provide Sun Life with sophisticated LAN bandwidth management capabilities so users can be reassigned to new servers through software commands rather than manual recabling.

Previously, Sun Life users had to go through multiple servers located on a backbone ring to access a variety of applications, which cluttered up the network and drained the servers of processing power, according to Kruk.

For internetworking, Sun Life has gone the route of the collapsed backbone, where a high-end Wellfleet Communications, Inc. Backbone Concentrator Node sits in the data center, allowing buildingwide LANs to interconnect through the one centrally managed box rather than requiring routers on every floor.

Wellfleet's technology relationship with Bytex means the two devices can be managed together, said John Scanlon, senior network analyst at Sun Life. However, he said he has concerns about what router vendor Network Systems Corp.'s recent purchase of Bytex [CW, Oct. 4] will mean for that relationship.

Wellfleet and Bytex "are not really going to be able to innovate together because Wellfleet and [Network Systems] are direct competitors," Scanlon said. He said he had no inkling of the buyout when Sun Life chose Bytex as its hub vendor last summer.

Meanwhile, despite doomsday predictions about the fate of IBM Networking Systems' cash cow, the 3745 front-end processor, Sun Life spent

Sun Life, *page 63*

Sun Life's John A. Kruk: *The old network was like trying to run a 'Minuteman army with West Point precision'*

ON SITE

Sun Life of Canada
Wellesley, Mass.

Challenge: To strike a cost-effective and manageable balance of downsized and upsized applications and create the underlying network infrastructure to support it.

Building blocks: Bytex smart wiring hubs, Wellfleet multiprotocol routers, a new IBM 3745 front-end processor, Novell NetWare.

Payback: Ability to handle 50% of staff moving or changing each year through software; to reap client/server cost benefits while maintaining mainframe advantages where applicable.

Novell one step closer to NetWare distributed manager

By Elisabeth Horwitt

Several users are treating NetWare Management System (NMS) 2.0, which Novell, Inc. began shipping this fall, as a useful intermediate step to the fully distributed, scalable NetWare Distributed Management Services (NDMS) that Novell should start rolling out sometime next year.

Indeed, NMS 2.0 paves the way to NDMS by providing distributed NetWare Loadable Module (NLM) versions of key management services, such as the Remote Network Monitoring (Rmon)-compliant LANalyzer, which monitors and diagnoses LAN traffic, said Steve Dauber, network management product line manager at Novell.

Novell formerly provided LANalyzer only as a stand-alone system that needed to be installed at each LAN it monitored. That approach was both expensive and troublesome, users reported. In contrast, NMS 2.0 provides LAN packet diagnostics in the form of Rmon agents that sit on a NetWare server on each LAN, collect statistics and report back to the central NMS console.

United Parcel Service, Inc. is in the process of deploying NMS 2.0 and is finding the LANalyzer service "a phenomenal tool [that allows the administrator] to click on the server, collect statistics, packet rates and figure out the problem," said Ralph Perez, section manager of LAN systems programming at UPS.

However, Perez expressed concern whether real-time collection and analysis of LAN traffic would overload his servers: "Novell, I think, calls it full-impact mode when it is acting as a LANalyzer." UPS is still evaluating impact.

Multiple management

The current NMS architecture requires that a single centralized Windows-based system collect all management information and initiate all management functions. The ability to distribute management functions across multiple NetWare servers, which NDMS will provide, is essential if the platform is to cope with a broad

Novell, *page 63*

Third-party support

Novell's NMS 2.0 has picked up strong support from third-party vendors. SynOptics Communications, Inc., for example, recently announced an NMS 2.0 version of its Optivity hub-based management system.

Optivity for NMS 2.0 includes an AutoTopology feature that automatically discovers hubs, bridges, switches and end-user devices such as PCs and plots their dynamic relationships, said SynOptics product line manager Tom Dyal.

Also included are NodalViews applications that "take a logical slice through the network and show all users part of the network what traffic is being generated, error conditions and who or what is eating up bandwidth" in a graphical fashion, Dyal said.

The above applications can report into the NMS database, giving network administrators views all the way to the user level, "so they can search for a NetWare user name and show what hub, bridge, port and slot the user's PC is connected to" on a topological map, Dyal said.

The AutoTopology and NodalViews on Optivity "are very nice," said Brian Gunnell, second vice president of data processing at Conseco Co., who saw the product demonstrated.

"All of my LAN administrators are in data processing; none [are in] in the user community," Gunnell said. "It's very exciting to be able to enter a user or node ID in the management station, find the user's port and look at the information relating" to the user.

Editorial Calendar (January-June, 1994)

Issue Dates	Ad Closings Color*	Ad Closings B&W	Editorial Features	Show Distribution	Ad Readership Study Issue	Response Card Deck
Dec. 27 & Jan. 3	Dec. 10	Dec. 17	**Special Edition:** Annual Forecast Issue			
Jan. 10	Dec. 24	Dec. 31	**Closer Look:** Object Database Management Systems		Starch	Mails: Jan. 12 Close: Dec. 11
Jan. 17	Dec. 31	Jan. 7	**CW Guide To: Spreadsheets and Spreadsheet Utilities** The New Capabilities *Buyers' Satisfaction Scorecard:* Windows Packages from Borland, Lotus, Microsoft, etc. *Firing Line:* Latest Windows Offering			
Jan. 24	Jan. 7	Jan. 14	**Closer Look:** ATM	**ComNet** Washington D.C., 1/25 - 1/27		
Jan. 31	Jan. 14	Jan. 21	**CW Guide To: Departmental Servers and Superservers** Matching a System to Departmental Needs (including Alpha, Tricord, Netframe, Sun, RS/6000, NCR, Sequent, Wyse, Compaq) *Buyers' Satisfaction Scorecard:* Leading RISC Servers *Firing Line:* Latest Server Product	**Executive Technology Summit** Tarpon Springs, Florida 2/2 - 2/4		
February		Dec. 27	CLIENT/SERVER JOURNAL	All Shows Feb. - April	Harvey	
Feb. 7	Jan. 21	Jan. 28	**Special Quarterly Report:** Re-engineering the Workplace		Starch	Mails: Feb. 9 Close: Jan. 3
Feb. 14	Jan. 28	Feb. 4	**CW Guide To: Management Tools for Large Networks** What Works When Systems are Distributed *Buyers' Satisfaction Scorecard:* Multivendor Network Management Software from DEC, HP, IBM,Sun, etc. *Firing Line:* Latest Management Package	**Networks Expo** Boston, 2/15 - 2/17		
Feb. 21	Feb. 4	Feb. 11	**Closer Look:** Windows and OS/2 Imaging Software			
Feb. 28	Feb. 11	Feb. 18	**CW Guide To: Work Flow Software** The Reality Behind the Promises *Buyers' Satisfaction Scorecard:* Leading Work Flow Software Systems *Firing Line:* Latest Work Flow Managers	**Groupware '94** Boston, 2/28 - 3/3		
Mar. 7	Feb. 18	Feb. 25	**Closer Look:** Desktop Laser Printers		Starch	Mails: Mar. 9 Close: Jan. 31
Mar. 14	Feb. 25	Mar. 4	**CW Guide To: RAID** Choosing Among the Various Levels of Disk Array Technology *Buyers' Satisfaction Scorecard:* Leading Server-based RAID Systems *Firing Line:* Latest Mainframe RAID Subsystem			
Mar. 21	Mar. 4	Mar. 11	**Closer Look:** Unix Workstations	**UniForum** San Francisco, 3/23 - 3/25		
Mar. 28	Mar. 11	Mar. 18	**CW Guide To: Wireless Networks** The Spectrum of Technologies, Including LANs, WANs and Radio Frequency *Buyers' Satisfaction Scorecard:* Leading Wireless LANs *Firing Line:* Wireless Services Product			
Apr. 4	Mar. 18	Mar. 25	**Closer Look:** Personal Productivity Software			
Apr. 11	Mar. 25	Apr. 1	**CW Guide To: NT vs. OS/2 vs. Unix** Desktop and Server Choices *Buyers' Satisfaction Scorecard:* Leading Server Operating Systems from IBM, Microsoft , Sun, etc. *Firing Line:* Latest Desktop Operating Systems from a Leading Vendor		Starch	Mails: April 13 Close: Mar. 17
Apr. 18	Apr. 1	Apr. 8	**Management Special:** IS Architecture in Times of Change	**AIIM** New York 4/18 - 4/21 **SIM Conference** Florida, 4/20 - 4/22		
Apr. 25	Apr. 8	Apr. 15	**CW Guide To: Data Access Tools** New Tools for Quick Access to Data Buried in Older Flat-file and Hierarchical Databases *Buyers' Satisfaction Scorecard:* Leading SQL-based Data Access Tools *Firing Line:* Latest Data Access Tool from a Leading Vendor			
May		Mar. 30	CLIENT/SERVER JOURNAL	All Shows May - July	Harvey	
May 2	Apr. 15	Apr. 22	**Closer Look:** Distributed Computing Environment	**Interop + Networld** Las Vegas, 5/2 - 5/6		
May 9	Apr. 22	Apr. 29	**CW Guide To: Mobile Computing** From Notebooks to PDAs *Buyers' Satisfaction Scorecard:* Leading Notebook Computers *Firing Line:* Latest Sub-notebook Product from a Leading Vendor	**International DB2 Users Group** San Diego, 5/8 - 5/12		Mails: May 11 Close: April 14
May 16	Apr. 29	May 6	**Special Quarterly Report:** Re-engineering the Workplace		Starch	
May 23	May 6	May 13	Windows World Open Supplement **CW Guide To: The Impact of OLE 2.0** What OLE can do for IS and How to Make Sure Your Favorite Desktop Software Vendor is Up to Speed *Buyers' Satisfaction Scorecard:* Leading OLE Applications *Firing Line:* Latest OLE Development Tool	**Windows World Comdex Spring** Atlanta, 5/23 - 5/26 **DB Expo** San Francisco, 5/24 - 5/27		
May 30	May 13	May 20	**Annual Job Satisfaction Survey** How IS Professionals and Managers Really Feel About Their Jobs and Careers			
June 6	May 20	May 27	**CW Guide To: Distributed DBMS** Selecting the Right Engine for a Distributed Database Architecture *Buyers' Satisfaction Scorecard:* Leading Relational DBMS *Firing Line:* Latest Relational DBMS Product	**Computerworld Smithsonian Awards** Washington, DC		Mails: June 8 Close: May 2
June 13	May 27	June 3	**Closer Look:** AS/400		Starch	
June 20	June 3	June 10	**CW Guide To: Mainframes** How Big Iron Vendors are Answering the Challenges of the Mainframe's Changing Role *Buyers' Satisfaction Scorecard:* Leading Mainframes from Amdahl, HDS, IBM, etc. *Firing Line:* Latest Mainframe Model			
June 27	June 10	June 17	**Closer Look:** PCMCIA Cards	**PC Expo** New York, NY, 6/28 - 6/30		

Editorial contacts (508) 879-0700 CW Guide: The Guide includes a package of articles on the stated topic, in addition to Buyers' Scorecard and Firing Line
Features Editor: Joanne Kelleher, *Management Features:* Allan Alter, *Closer Look:* James Connolly, *CW Guide Articles:* Mary Brandel & Derek Slater, *Buyers' Satisfaction Scorecard:* Michael Sullivan-Trainor, *Firing Line:* Garry Ray
***Color close also applies to ads within Special Editorial Features and Premium Positions.**

Mary J. Cronin

Internet shortcuts

It would make sense to index the resources on the Internet in a consistent, easy-to-use format, but so far that hasn't happened. Users must still contend with imprecise navigational tools and haphazard subject descriptions. However, some shortcuts can make on-line excursions less frustrating and more profitable. Here are a few of them:

▶Demographic and marketing data for every state, city and metropolitan area in the U.S., including disposable personal income per capita, can be found in the 1990 Census Summary tables. These are available for searching at many university Internet sites, including the University of Southern California (Telnet to cwis.usc.edu) and the University of Pennsylvania (Telnet to penninfo.upenn.edu).

The Economics and Business directory at USC also provides access to Asia and Pacific business and marketing resources, Central European business information and world statistics from the United Nations.

▶If tracking recent federal legislation is a priority, the Library of Congress (Telnet to marvel.loc.gov) maintains a current legislative database, searchable by subject as well as by sponsor and bill number. The same connection provides an Internet gateway to the White House, the Food and Drug Administration, the Department of Commerce and the Department of Energy.

▶Everywhere you turn on the Internet are stores of government information. The National Technical Information Service offers free information on patents, technical research and regulations available through Fedworld (Telnet to fedworld.doc.gov).

The Commerce Department plans to charge an annual subscription fee for the data it posts daily on the Economic Bulletin Board — economic indicators, treasury rates and international trade opportunities — but new users can browse for free (Telnet to ebb.stat-usa.gov and log in as trial). You can't download the files, but you can read them on-line.

▶Trade and export resources on the Internet range from documents such as the Export Guide from the National Trade Data Bank and the text of the North American Free Trade Agreement, accessible at the University of Missouri at St. Louis (Telnet to umslvma.umsl.edu), to discussion lists where deals are often made between vendor and customer. Terry Brainard Chadwick, president of InfoQuest, used the Eastern European Business Network list to match a U.S. manufacturer of food dehydrators to entrepreneurs and government clients in Hungary. She describes this list as one of the "hidden assets" of the Internet. (To subscribe, send E-mail to listserv@ncsuvm.cc.ncsu.edu.)

▶Many corporations use the Internet to deliver late-breaking news to corporate desktops. AT&T, for example, provides daily international and domestic news updates to corporate staff through ClariNet, an Internet-distributed newswire service.

For an annual fee, ClariNet organizes thousands of stories from United Press International and other agencies into customized "electronic newspapers" with intensive coverage of desired topics.

▶For a sample of what's news in any area, there's also the Electronic Newsstand, which offers tables of contents and selected articles from publications such as *The Economist*, *Financial World*, *Technology Review* and *Computerworld* over the Internet (Telnet to gopher.netsys.com and log in as news). More full text is a possibility down the road, but right now, this is more an appetizer than a complete meal.

Cronin is the author of *Doing Business on the Internet: How the Electronic Highway is Transforming American Business* (Van Nostrand Reinhold). She can be reached on the Internet at cronin@bcvms.bc.edu.

Novell takes distributed step

CONTINUED FROM PAGE 61

range of management services and manage the hundreds or thousands of client and server systems that reside at many corporations, Dauber said.

The migration of LANalyzer to NetWare servers is one of the first steps Novell has taken to move users from NMS' centralized architecture to NDMS' distributed platform that sets up NetWare servers as domain managers for local client/server networks, Dauber said.

Another management service that has already been distributed as an NLM is NetExplorer, an NMS discovery service that automatically determines what resides on the network.

During the next six to 12 months, Novell will migrate other services to NLMs, including inventory management, software distribution, real-time monitoring and analysis of network traffic and user administration, Dauber said.

Migration fears

Users did express some fears about the difficulty of migrating from a centralized to a distributed system. "Migration is a concern, especially as we get more dependent on NMS," said Brian Gunnell, second vice president of data processing at Conseco Co., a Carmel, Ind., manufacturer. "If you change the architecture or if it's converted to another environment, it's a concern, but [NDMS] is so far in the future, Novell isn't saying much to end users except, 'Trust me.'"

Novell is smoothing the way for users to migrate from NMS to NDMS by preserving user and application interfaces between the two platforms, Dauber said. However, he said that users may run into some challenges migrating their management databases off one or more Windows systems to a single database structure on a NetWare server. The NetWare database, which acts as common ground for applications to share data, is a linchpin for NDMS' distributed architecture.

> NDMS "is so far in the future, Novell isn't saying much to end users except, 'Trust me.'"
>
> —*Brian Gunnell, Conseco Co.*

Tim Clark, network support supervisor at Ciba Vision, said he was concerned about how much more it would cost to set up separate domain managers under NDMS.

NDMS should actually help customers keep costs down by allowing them to implement management services on existing NetWare servers, Dauber said. Then if they add more users, network devices or services, they can simply add more servers to share the load.

Sun Life

CONTINUED FROM PAGE 61

$250,000 on a new 3745 to improve performance over its 3725, which Kruk said was too small - electronically and too big physically to meet Sun Life's needs. These include some backup of the mainframe in Sun Life's Toronto headquarters.

"Every time the power fluctuated, [the 3725] went down," plus it didn't support 16M bit/sec. Token Ring and frame relay, Kruk said.

The 3745 is indicative of the fact that Sun Life's mainframe still plays an active role in the company. While the insurance provider is counting on client/server for its flexibility and cheaper MIPS, it has decided to "upsize" certain appropriate functions, including data storage and electronic mail, according to Kruk.

The insurer discovered that having each user's logon, applications and files stored on 21 servers spread across Sun Life's three-building campus — combined with the fact that users weren't cleaning out their files — made managing LAN-based storage a nightmare, Kruk said.

Back to mainframe

Then came the cost of providing separate uninterruptible power supplies and archival backup and storage — functions that in the mainframe world come as a package deal. These factors, plus Kruk's perception that current LAN-based mass storage products lack sophistication and reliability, led the insurer to move storage management back to the mainframe.

In addition, when the firm's pricing policy for 1994 changed to allow unbundled fees for mainframe services, Sun Life realized it could not beat the mainframe charge of $20 per month per user for E-mail by running it on a LAN.

Thus, Sun Life's custom E-mail package once again resides on the mainframe.

Whittling away

The recent company trend of paring down diverse equipment and communications protocols to ease management headaches is evident on several fronts at Sun Life.

On the LAN software side, the insurer is easing off its Banyan Systems, Inc. Vines internetwork in favor of Novell, Inc.'s NetWare. The insurer wants to run fewer network protocols and opted for NetWare largely because "mainframe applications port better to NetWare than to Vines," said John Kruk, telecommunications and network services officer.

Meanwhile, the company has standardized on Compaq Computer Corp. SystemPros for servers and has stopped purchasing Banyan CNS servers and IBM PS/2 Model 95s.

To boost power at the desktop, Sun Life is transitioning its nearly 800 Intel Corp. 80386 and 80286-based PCs, mostly of IBM origin, to 1486-based systems, also from IBM. However, Kruk said he is concerned that this may be only a Band-Aid fix with the advent of Intel's Pentium and the Motorola, Inc./IBM/Apple Computer, Inc. PowerPC-based systems.

"The 1486 machines will probably be obsolete for the applications they were originally purchased for within six months," Kruk said.

—*Stephen P. Klatt Jr. and Joanie M. Wexler*

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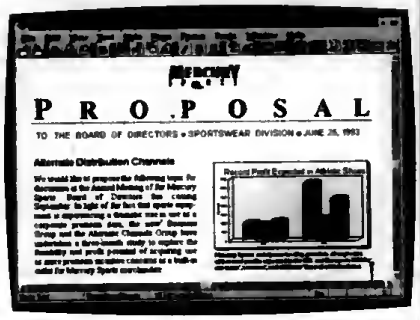

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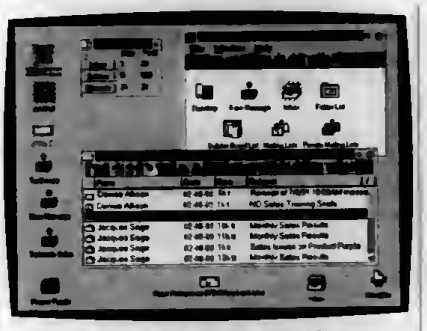

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Pacer Software, Inc. has announced upgraded versions of its PacerShare and PacerPrint file and print servers for Unix systems.

According to the La Jolla, Calif., company, these releases offer Macintosh-based administration and management, enhanced integration with other Unix-based file server products and improved performance.

PacerShare is an Apple Computer, Inc. AppleTalk Filing Protocol 2.1-compliant implementation for Unix host platforms. With PacerShare, Unix volumes and directories can be mounted and used as if they were Macintosh disks.

The products are available for Sun Microsystems, Inc.'s SPARC platforms, Hewlett-Packard Co.'s 9000 700/800 and Digital Equipment Corp.'s RISC Ultrix systems. Pricing is based on the number of simultaneously connected users, starting at $3,000 for a 20-user license.

▶ *Pacer Software*
(619) 454-0565

NetManage, Inc. has introduced NetManage X products, a suite of products that allow Windows PC users to integrate X Window System and Windows in the same environment.

According to the Cupertino, Calif., company, NetManage X products consist of Xsession, Chameleon/X and ChameleonNFS/X.

Xsession offers both a PC X server and a TCP/IP protocol stack. Chameleon/X includes the functionality of Xsession and Chameleon TCP/IP for Windows applications. ChameleonNFS/X includes Xsession, Chameleon/X and Network File System client/server implementations for Windows.

All of the products include an X server and the NetManage TCP/IP protocol.

Xsession, Chameleon/X and ChameleonNFS/X cost $445, $695 and $790, respectively.

▶ *NetManage*
(408) 973-7171

Source-Comm Corp. has announced its ANS/1010 Server product and Client 3270/5250 software, which together offer remote access for notebook, laptop and desktop PCs to IBM mainframe and mid-range hosts.

According to the Valencia, Calif., company, the ANS/1010 Server includes eight asynchronous ports for dedicated or dial-up connection from PCs at up to 19.2K bit/sec., in addition to two synchronous ports for local or remote connection to hosts at up to 64K bit/sec. each.

The Client software offers emulation of both IBM 5250 and 3270 systems and runs on the attached PCs.

The ANS/1010 Server is priced at $3,995, plus $495 for the Client 3270/5250 software with an eight-user license.

▶ *Source-Comm*
(805) 294-0555

Product shorts

Delrina Corp. has announced the Delrina Fax Broadcast Server, which allows PC users to broadcast fax messages using any industry-standard modem, Delrina software and MCI Communications Corp.'s Fax Broadcast Service. Cost: $69 for WinFax Lite users and users with competitive products. Delrina, San Jose, Calif. (408) 363-2345. . . . **Locus Computing Corp.** has announced PC-Interface for Macintosh, a product that allows users to share Macintosh files, applications and Adobe Systems, Inc.'s PostScript printers on a networkwide basis using IBM's RS/6000 as a nondedicated server. The product provides Apple Computer, Inc. AppleShare protocols on the AIX system when installed on the RS/6000. Cost starts at $720 for a two-user license. Locus Computing, Inglewood, Calif. (310) 670-6500.

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Amdahl users eye open systems strategy

Firm to rely on other vendors' Unix hardware

By Jean S. Bozman

Amdahl Corp. is trying to bridge the widening gap between legacy mainframe systems and open systems, even as many of its 2,000-plus sites worldwide move to Unix systems and client/server computing.

Some of the $2 billion mainframe maker's largest users said they like the new strategy, but many have already launched their move to open systems with the help of other vendors.

Amdahl will continue to sell IBM-compatible mainframes and will build next-generation mainframes with more off-the-shelf components to reduce costs. At the same time, Amdahl said it will resell Sun Microsystems, Inc. Unix servers [CW, Sept. 27] and work with Sun to transfer mainframe functionality into Sun's Solaris operating system. To pull enterprise client systems together, Amdahl will provide re-engineering services through its Antares Alliance Group venture with Electronic Data Systems Corp.

As Amdahl downsizes its work force to 5,800, it will do less in-house engineering and may eventually drop its 11-year-old UTS Unix mainframe product, said Jim Cassel, vice president and director of Gartner Group, Inc.'s Large Computer Strategies Group in Stamford, Conn. Amdahl, which has had three rounds of layoffs and has restructured twice in 12 months, was unprofitable for most of 1992 and 1993.

Holding the line

Despite Amdahl's downturn, many sites are keeping their mainframes online. Frank Stromboe, information services director for the city of San Antonio, plans to upgrade the city's Amdahl 5995 mainframe for at least four more years. He is moving quickly to Unix, having recently tested Amdahl's UTS as a Unix server on the mainframe, and is working with Software AG of North America, Inc. to develop client/server applications for midrange Unix servers. The advantage of migration is cost: A police dispatching system that uses 20% of mainframe cycles is moving to two NCR Corp. 3450 Unix servers.

While pleased with Amdahl's service and support, Stromboe said he senses Amdahl's dilemma as it tries to please traditional IBM-compatible sites and become an open systems integrator. "It sounds like they need to change direction, but the direction is between a rock and a hard place," Stromboe said.

San Antonio has been using Amdahl mainframes for more than 12 years. "They've constantly followed IBM's direction, and the question [now] is, are they going to be a leader or continue to be a follower?" Stromboe asked.

"Clearly, we've had to refocus the company and be very, very efficient in the use of our resources," Chief Executive Officer Joseph Zemke acknowledged. Future Amdahl mainframes will use low-cost CMOS chips to squeeze profits from low-margin CPUs, he said. But consulting and re-engineering services will be equally important. "We have always provided an alternative source of supply, ideas and strategy," Zemke said. "We did that within the IBM architecture, and we're going to continue to do that in this new generation of machines.

For some users, the future means leaving mainframes behind. The Marshfield Clinic in Marshfield, Wis., has two Amdahl mainframes but is migrating to open systems servers with Amhahl's UTS and its consulting help.

Amdahl, *page 70*

Harold Lorin

IBM buys time

At this time, IBM is tied to the tracks at a major juncture with trains approaching from all sides. Its best hope for slipping the ropes is to use the CMOS-390 as a delay tactic while the SP-Commercial, based on memory-shared PowerPC arrays, is readied for the market.

The importance of the CMOS-390, from IBM's perspective, is that it provides a growth option that does not break MVS culture. It gives IBM and its mainframe loyalists breathing space to prepare for the transition to the PowerPC running AIX or Microsoft's Windows NT Advanced Server. If this strategy is executed in an orderly way, IBM will be able to convert its installed bipolar-based legacy systems into a major (as much as 60%) share of the enterprise server and superserver markets.

Water-cooled mainframes are not going out at the rate the New Age press suggests. IBMers say there are Hewlett-Packard "hit teams" coming into VSE accounts and staying until they win the business or are arrested, but there is much less movement in the large MVS machine sector. Customers contemplate the costs of client/server migration, worry about the uncertainties of putting mission-critical applications on the network and hesitate to take major new directions.

Familiar ways

The CMOS-390 gives these customers a welcome reprieve from the necessity of making drastic decisions. It addresses their key problem — the cost of mainframe hardware — by providing growth at CMOS costs. As an off-load engine rather than a server, the machine splits functions in a way that's familiar to mainframe culture. It leaves the MVS/DB2 mind-set intact. And, most important, it provides a tactical growth path.

Customers taking the CMOS-390 can prepare for future moves to the PowerPC by writing applications using DCE, Posix or XPG4 that will run on MVS/Open Edition or AIX. Long term, everything will migrate (with guidance and sup-

Lorin, *page 70*

Prudential builds new data center for consolidation

By Johanna Ambrosio

■ Christmas came a few months early at Prudential Securities, Inc. where Mohammed Mossad says he got to build "the 21st-century data center of my dreams."

The data center, which features brand-new equipment as well as fiber optics and backup facilities, replaces a circa-1970 building.

"You don't get a chance to do this very often," said Mossad, senior vice president of information systems and telecommunications services at the New York securities firm.

The new center was cut over on Oct. 25; the old one has been shut down.

Moving day

In the next year, some 4,500 Prudential employees will move into the new building, one floor of which is the data center, on the tip of downtown Manhattan. The trading floors, brokers, operational facilities — all of the technology-driven departments — will join the data center staff. The new building will serve as Prudential's headquarters for capital markets and investment banking. The company's other headquarters remains near the South Street Seaport, also in Manhattan, and will continue to house some 1,500 employees in the retail and mutual fund areas.

Prudential decided to make the move as a way of consolidating eight buildings into two. The leases on the eight buildings will expire at the end of next year, and the company wanted to centralize its staff now scattered around Manhattan. In addition, the company was able to negotiate a much lower per-square-foot rate than it is currently paying, according to Rodger Parker, senior vice president and director of administrative services.

He would not provide financial specifics but did acknowledge that the overall cost will still be higher because of the new data center.

"We are making the operational departments much more functional," Parker said. "The programmers are now on two floors, where they used to be in four separate buildings." Similarly, the control center, which includes data center support, network control and console control, is now in one area. Before, they were all separate.

"That will improve the communications among all the areas," Mossad said. An outside consulting firm, Infra-Structures, Inc. in Brent-

Prudential, *page 71*

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Optic avenues opened for brokers

By Thomas Hoffman

A recent ruling permitting brokerages to expand their options for data storage to optical disc storage will prove to be a boon for economic reasons. Until recently, brokerages were forced to store volumes of financial transactions on cumbersome paper-, microfilm- and microfiche-based mediums.

"The optical technology is much more economical than fiche and paper," said Samuel A. Malek, manager of technology at Salomon Brothers, Inc.

Salomon Brothers, which has been piloting ablative write-once, read-many (WORM) and magneto-optic technologies for the past six months, is hoping to retire 80% of its microfiche-based storage records by year's end, Malek said.

Rule change

Last June, the Securities and Exchange Commission (SEC) amended the Securities Exchange Act of 1934, Rules 17A/3 and 17A/4, which in effect permits brokerages to store financial data on optical discs. The "no-action" ruling, which followed three years of intense lobbying by members of the Securities Industry Association (SIA), allows securities firms to deploy nonerasable and nonrewritable magneto-optical and WORM technologies.

But it is still unclear when the SEC rules will go into effect permanently, said Douglas G. Preston, associate general counsel at the SIA in New York and SIA staff adviser to an SIA ad hoc subcommittee that is pushing for the change.

Salomon Brothers' Samuel A. Malek: *'The optical technology is much more economical'*

Preston said the SIA has been lobbying the SEC to expand the amendment even further to include other forthcoming technologies, such as optical tape, so that brokerages can adopt them as they mature.

In May 1991, the SIA subcommittee submitted a rule-making petition to the SEC to open the amendment to other technologies, as long as they adhere to SEC safeguards requiring security, compatibility and readability, according to Preston.

Meanwhile, firms such as Kidder, Peabody & Co. have jumped headlong into the optical disc fray. Kidder, Peabody has been using Filetek, Inc. imaging software, Hitachi America Ltd. disk drives and a FileNet Corp. optical disc jukebox to store 1.2 million pages of customer financial statements each month since July.

The system has reduced the hours it took to locate and print a customer's financial statement from a microfiche system to 10 seconds using optical images viewed over IBM 3270 terminals, said Larry Caminiti, Kidder's manager of data resource management. "The response I've been hearing from users has been very positive, and with users telling their peers about it, we can't get it out there to them fast enough," Caminiti said.

Lorin: IBM buys time

CONTINUED FROM PAGE 67

port from IBM) to SP-Commercial, and the "390" will go the way of the once-beloved RISC-like 7094.

If the CMOS-390 is late, however, or its integration into MVS environments is clumsy, customers will desert MVS for AT&T/NCR, HP, Sequent and other Unix- or NT-based superservers that can deliver seriously improved price/performance. IBM's AIX will not gain enough market share to help IBM survive this. That may sound overly dramatic, but this potentially cataclysmic reduction in revenue will hit at a time when the AS/400 is undergoing redefinition and new revenue streams are just being built.

If the strategy fails, it will be a failure of will and culture. There are still those at IBM who believe the Japanese computer manufacturers are a threat and the Sysplex technology on which the strategy depends has struggled badly. The 390 microprocessor is not rooted in the Hudson Valley.

Early signs give reason for concern. In initial customer presentations, there have been glitches in what can be elegantly off-loaded. The first delay in availability has been announced, and the clock is ticking loudly. With SP-Commercial coming on, superserver NT and Unix clusters getting more powerful and client/server development tools flooding into the market, the moment of opportunity may pass before IBM can seize it. And if that happens, the company will lose any chance for control of the transition from the 390.

When we reach a point where the costs associated with a jump to client/server Unix or Windows NT are less than the costs of sticking with MVS, the world will belong to superserver vendors. The end of the 390 chapter could be orderly or it could be bloody. IBM can decide.

Lorin consults on information technology strategy with organizations in Europe and the U.S. and is senior adjunct professor at Hofstra University. He was previously the ranking faculty member at the IBM Systems Research Institute.

IBM partners with users to develop unifying application

By Michael L. Sullivan-Trainor

■ If you were to name the fiercest rivalries in the past decade, high on the list would be IBM vs. Xerox Corp. in the arena of high-performance printers and Bell & Howell Co. vs. Pitney Bowes, Inc. in computerized mailroom processing.

Yet the need to get products out quickly and match them to user applications is causing even these competitors to cooperate. Witness Xerox's reselling of a high-speed printer engine to IBM in a deal announced last month at the Xplor International document management conference.

"It's like [Yasser] Arafat and [Yitzhak] Rabin shaking hands," said Edward W. Pullen, service director at Computer Intelligence/InfoCorp in Santa Clara, Calif.

IBM added a twist to this trend — partnering with users to develop an application combining the technologies of multiple vendors.

Six user companies — Advantis, Aetna Life and Casualty Co., Bell-South Corp., Electronic Data Systems Corp., Merrill Lynch & Co. and Pacific Bell — are working with eight vendors — Bell & Howell Phillipsburg, Beste Bunch, Inc., Cope, Inc., IBM's Pennant Systems, Johnson & Quin, Inc., Pitney Bowes, Roll Systems, Inc. and Wallace Computer Services, Inc. — to develop a ground-breaking application unifying mainframe databases with mailroom/billing output and processes.

Work-flow software key

The key technology in the application is IBM's work-flow manager software, an as-yet unnamed product that will provide a central data gathering point with a common graphical interface to monitor, control and troubleshoot the processing of millions of bills and mailing packets generated from data residing on the mainframe.

After more than a year of planning, the application was demonstrated for the first time at the Xplor conference last month. Advantis, which is beta-testing the system, will be the first to implement a production version of the application in the first half of 1994.

"We volunteered because we saw a need for [us] to have a better management application," said Tom D'Apice, manager at the Advantis Dallas Data Center. "We run into roadblocks because we don't have all the links between vendors' systems. We spend a lot on overhead in writing code to control the systems locally. Right now it's a maintenance nightmare."

The partnership is shifting the issue of linking systems through a central management application from the users onto the vendors, D'Apice said.

Advantis information systems executives said they expect to achieve the following benefits: control of individual pieces of mail, reduced document rework, more flexibility in mixing different inserts into the mail package and easier application maintenance.

"Several of the vendors didn't understand the process from our point of view. It took a while for them to stop thinking only about their individual pieces. Then a light went on and they saw why we have the requirements we do," said Larry Stenson, director of the data center.

Amdahl to diversify

CONTINUED FROM PAGE 67

Peter Bauer, director of information systems, said the clinic's Amdahl 5995A, purchased used, will probably be upgraded. "This will last us for several years, and we'll probably be in the new world of the RISC boxes," he said.

Given users' moves to downsize applications and the heavy discounting in IBM-compatible mainframes, critics said Amdahl should have moved more quickly.

"They have not taken aggressive action until the last six months or so when the pressure grew significantly," said Bob Djurdjevic, president of Annex Research in Phoenix. "It's somewhat similar to the IBM story in that they kept refusing to accept the reality of the situation — that their margins weren't going back up to 40% or 50%."

Not an easy sell

Some longtime Amdahl users are not buying the strategy, saying they want traditional mainframes. "I couldn't care less about Unix," said George Sekeley, president of CSX Technologies, Inc. in Jacksonville, Fla., which uses a seven-processor Amdahl 5995M mainframe and client/server systems running on IBM's OS/2 machines. "I wish them good luck. I think it's tremendously important that they stay in business to give [users] a choice in mainframe suppliers."

Amdahl's strongest suit may be its technical support, consulting and educational services — high on the lists of the vendor's longtime users. Amdahl consultants helped migrate mainframe work loads from CSX's Port Elizabeth, N.J., data center to the Jacksonville data center, Sekeley said.

But Amdahl will have to bank on its services because the same users still expect it to compete in three-way bids for mainframe hardware business. "If they win on price," one West Coast user said, "they'll win."

Prudential builds new data center

CONTINUED FROM PAGE 67

wood, N.Y., helped Prudential design the new command center. "We told them what we wanted, and they executed it nicely," he said.

"There are a lot of efficiencies to having everyone in one building," he added. Some of these benefits are related to personnel and others are driven by technology. "It's easier and more cost-effective to deliver fiber to everyone in one building. You don't have to build bridges across buildings." Similarly, providing multimedia information to traders will be easier to do in one facility, he added.

Inventory list

Every workstation will be tied to the data center through a LAN, and "that will provide immediate response time to data and much better access to information," Mosaad said. Prudential is using twisted-pair cabling on each floor and a fiber-optic backbone among the floors. In the data center are two IBM ES/9000 Model 962s; 1.6T bytes of disk storage — primarily IBM 3390 Model 3s and some Model 2s; eight Storage Technology Corp. silos; some front-end controllers; and a private branch exchange. All of the data center gear is tied to the mainframes via Escon fiber-optic cables.

In addition, a backup power generator and facilities for the data center, communications and trading floors will ensure no costly outages. Previously, the company had to rent a generator whenever there were power problems. "It's very costly to build multiple facilities for different buildings," Mosaad said.

The move itself took place over a weekend. Although the company did not move much gear because it purchased all new equipment, the largest chunk of time was consumed by building the communications infrastructure. "That was a major undertaking," Parker said. "It took us about six weeks to install the network and then we had to test to make sure every connection works."

Another tricky area was getting the 1.6T bytes of data into the new data center. Prudential opted to do this electronically with programs written in-house. "We took advantage of the computer to help ourselves move and test," Mosaad said. After the data was over, the data center staff selected 500 files and compared them byte by byte to make sure everything transmitted.

All told, the move occurred without a hitch. In fact, Parker said that end users paid them the ultimate compliment: They did not notice that the data center had moved. "A lot of people called once they heard and said they never would have known," Mosaad said.

Brief

Candle supports DB2

Candle Corp. announced support for IBM's DB2 Version 3.0, which will be available when the IBM relational database management system ships Dec. 17. The support was announced at the Guide meeting for IBM users, along with an enhanced version of the Omegamon II for CICS performance monitor that tracks transactions over an enterprise network. Candle's new Transplex Navigation feature, slated to be available by year's end, will support IBM's Common User Access interface, said Janice Roberts, senior marketing manager for Candle's Performance product line.

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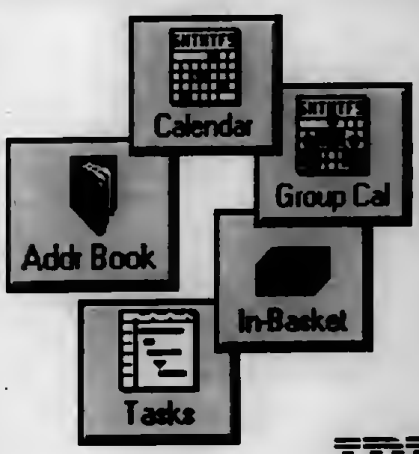

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Cross Access Corp. has introduced the CrossAccess Data Delivery System, a software product designed for enterprisewide information access in heterogeneous client/server environments.

According to the Oak Brook, Ill., company, features include a single relational update capability and support for a relational approach to data access in IBM CICS on-line transaction processing environments.

Version 1.8 also includes catalog support, expanded support for multiple versions of TCP/IP, enhanced use of Computer Associates International, Inc.'s IDMS Integrated Data Dictionary and restart capabilities.

CrossAccess Version 1.8 prices start at $100,000 for typical IBM mainframe configurations.

▶ *Cross Access*
(708) 684-2345

IDEAssociates, Inc. has introduced the IDEAcomm Midrange Client communications software.

According to the Billerica, Mass., company, the software was designed for its IDEAcomm product line, which addresses the networking needs of Windows-based PCs in an IBM midrange client/server environment.

The product was created for PC users attached to host systems at central sites and branch offices where remote users need host connectivity.

IDEAcomm Midrange Client can also be used for IBM AS/400 sites that are replacing terminals with Windows-based PCs linked to Novell, Inc. Token Ring and Ethernet LANs. Features include auto font sizing, Dynamic Data Exchange and a cursor ruler function.

The product supports Ethernet, Token Ring, Synchronous Data Link Control and X.25.

IDEAcomm Midrange Client is available at $395 for a single client, $2,950 for a 10-user site license, $6,875 for a 25-user site license and $12,750 for a 50-user site license.

▶ *IDEAssociates*
(508) 663-6878

Appintec Corp. has announced Windows- and Macintosh-compatible graphical user interfaces (GUI) for its TeleMagic/400 Contact and Activity Management software.

According to the Emeryville, Calif., company, the TeleMagic/400 GUI is an expandable graphical framework that organizations can use to further link marketing, manufacturing, shipping, customer service and other operations.

Version 5.0 features activity plans, To Do lists, activity panels and campaign management.

TeleMagic/400 GUI costs $199 per workstation.

▶ *Appintec*
(510) 450-1550

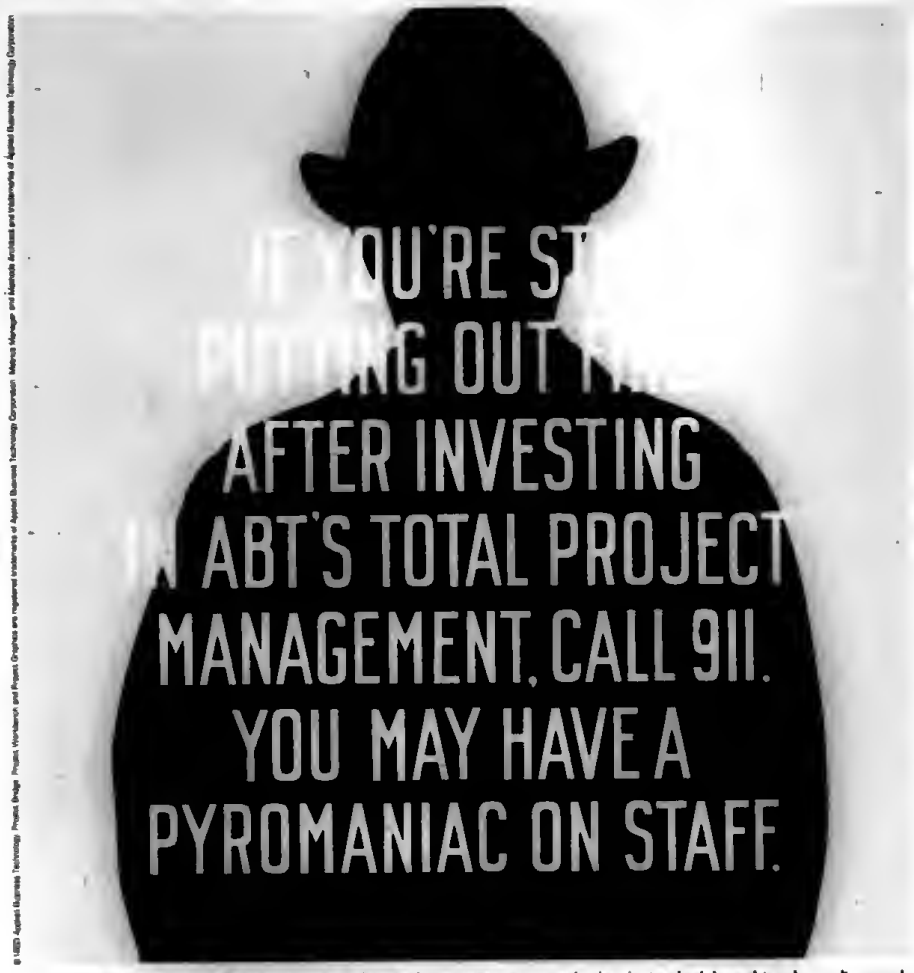
Generic Software, Inc. has announced the Business Management Series, a group of fully integrated and flexible financial applications for IBM's AS/400.

According to the Madison, Miss., company, the series modules include GL 400, a general ledger/financial reporting and budget system; AP 400, an accounts payable system; AR 400, an accounts receivable/credit and collection system; and FA 400, a fixed assets system. The general ledger module provides its own report writer for designing custom financial statements.

The modules support up to 99 companies and divisions. Each can run as a stand-alone system for users who do not need all four applications.

Prices for GL 400 and AR 400 begin at $995. AP 400 starts at $795 and FA 400 begins at $295.

▶ *Generic Software*
(601) 853-1189



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Software reuse plans bring paybacks

closer look
Reusable software

By Gary H. Anthes

Talk about payoff: The Pentagon reckons it could save $300 million annually if it increased software reuse by just 1%.

The U.S. Department of Defense sees software reuse as a necessity in these days of the incredible shrinking budget. Corporations, aided by new technologies, are also turning with fresh interest to the age-old concept.

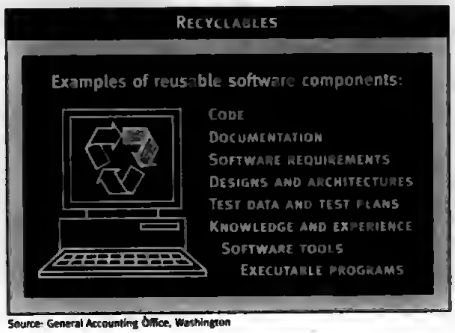
Software reuse dates to 1944, when a Defense Department programmer wrote a routine to compute the sine of an angle, a useful thing to do when plotting missile trajectories.

Now it has expanded in scope from completing specialized mathematical functions to using libraries of routines written by user organizations, programming with reusable objects and building applications with reusable templates.

Information systems managers might eye their software development backlogs with more enthusiasm if they realized that half of the required code — not to mention designs, test plans and documentation — had already been written. According to Carma L. McClure, research vice president at Extended Intelligence, Inc. in Chicago, 40% to 60% of all new code could potentially come from libraries of reusable components.

"Software reuse is one of the best-kept secrets in the computer business today," said McClure, who gives seminars on the subject.

However, she said she has seen interest in reuse rise sharply in the past 18 months. She noted that companies are beginning to establish internal organizations devoted specifically to improving quality through software reuse.



Source: General Accounting Office, Washington

Reuse programs

McClure said companies with aggressive reuse programs have seen handsome payoffs:

- GTE Data Services, Inc. in Tampa, Fla., has gained a 20% to 30% productivity increase from its repository of 960,000 lines of Cobol, C, assembler and PC spreadsheet code. Each year, GTE Data's chief information officer raises the target percentage for reused software.
- Canadian National Railway wrote 10,600 lines of new code for a freight-car optimization system, but it used 137,600 lines from its application software library and brought up the complex application with just eight person-months of effort.
- Canadian Airlines International Ltd. bought a frequent-flier application "template" from Trans World Airlines, Inc. and knocked 50% off the time required to code a system from scratch. "More important, it taught them the frequent-flier business," McClure said.

Opportunistic way

According to the U.S. General Accounting Office, users often pursue reuse in an ad hoc or opportunistic way — they get into a development project and then look around for code that can be "salvaged" from some other application.

A better approach, counsels the GAO and others, is to put in a systematic, long-

DOD, *page 76*

Application-specific templates

There are two types of software reuse. "Horizontal" reuse spans applications and includes generic functions such as sorting algorithms or user-interface mechanisms.

"Vertical" reuse looks for functions common to a class of applications, such as a gross-pay-to-net-pay routine in accounting systems.

Software vendors with application-specific "templates" — high-level designs tied in with computer-aided software engineering tools — can help users with vertical reuse. For example, Texas Instruments, Inc. offers templates for generating general ledger systems and other applications; Andersen Consulting has them for functions such as life insurance and policy administration; and Oracle Corp. recently announced seven industry-specific templates that use business models to help generate applications for pharmaceutical, oil and gas, utilities and other companies.

Other vendors offer products geared more to horizontal reuse. For example, American Management Systems, Inc. in Arlington, Va., offers a collection of reusable software modules for foundation functions such as database interaction, user interfaces and error correction. Software AG of North America, Inc. in Reston, Va., offers a code generator that includes a library of 65 software models for generic functions such as data entry, online browsing and menu selection.

At a lower level of granularity lie specialized pieces of reusable code. For example, the Open Software Foundation offers the OSF/Motif widget set, a library of objects for constructing graphical user interfaces. The objects define functions such as push buttons, text fields, labels and pull-down menus.

— Gary H. Anthes

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CA readies Windows-based tool

By Thomas Hoffman

Computer Associates International, Inc. is readying a Windows-based query and reporting tool designed to access data from as many as 20 popular database environments.

CA-Visual Express 1.0, in beta testing and scheduled for delivery early next year, is a combination of several software tools, including CA-Visual Easytrieve and CA-Visual Ramis query languages for host-based processing.

Because of its simplified point-and-click capabilities, CA-Visual Express does not require end users to have any programming expertise, according to Marc Sokol, CA's director of product strategy. "You can join data from a VSAM file and an IMS database together with no knowledge of how those intricacies operate," Sokol said.

Early beta testers of CA-Visual Express 1.0 have lauded the package for its enhanced reporting functionality, compared with its QbyX predecessor.

CA-Visual Express beta testers also said they were impressed with the integration of CA's Report Engine Technology, or CA-RET 2.0, a function that CA has integrated with QbyX, a query-by-example tool for CA's IDMS and Datacom host database products.

"Query tools aren't known for their reporting capabilities, so CA-RET is a nice addition there," said James Cone, a database manager at Fel-Pro, Inc., a Skokie, Ill., automotive parts manufacturer that has been testing the package for the past month.

CA-Visual Express is compliant with Microsoft Corp.'s Open Database Connectivity (ODBC) capabilities, allowing users to access local and host-based SQL databases such as CA-Datacom, CA-IDMS, IBM's DB2 and Borland International, Inc.'s dBase. CA-Visual Express also utilizes Watcom International Corp.'s Watcom SQL Database Server as a choice for local personal database storage and retrieval, a feature that pleases James Bradshaw, a CA-Visual Express beta tester and director of database administration at Clemson University.

"The Watcom database allows us to store data locally in a PC database of our own choosing, which our end users in the field have responded favorably to," Bradshaw said of users at the Clemson, S.C., institution. Bradshaw added that Clemson is planning to exploit the ODBC connectivity in CA-Visual Express in order to transfer data from its Hitachi Data Systems Corp. AS/EX 80 mainframe to PC users via TCP/IP.

Shaku Atre, president of Atre, Inc., a Rye, N.Y., consultancy, said CA-Visual Express stacks up well against competitive products such as Gupta Technologies, Inc.'s Quest and Powersoft Corp.'s PowerBuilder. "PowerBuilder doesn't have as many reporting capabilities as CA-Visual Express, and PowerBuilder's CA-IDMS and CA-Datacom connections are not that seamless or robust," Atre said.

QbyX customers will be eligible to receive free upgrades to CA-Visual Express when the package becomes available in the first quarter of 1994, Sokol said. CA-Visual Express will be priced at $495 per ODBC client. CA-Visual Easytrieve and CA-Visual Ramis will be priced at $25,000 for users needing access to mainframe data that is not ODBC-compliant.

SQL tools

Only 10% of corporate data in the U.S. resides in relational database management systems, while the other 90% exists in nondatabase and nonrelational environments, according to Shaku Atre, president of Atre, Inc., a Rye, N.Y., consultancy. As such, SQL-only query and reporting tools can access just 10% of corporate data that resides in relational database environments, according to Atre.

Digitalk, Inc. has announced a 32-bit version of its object-oriented Smalltalk/V development environment for Microsoft Corp.'s Win32.

According to the Santa Ana, Calif., company, developers can deliver Smalltalk/V applications on Windows 3.1 and Microsoft's Windows NT that run up to 100% faster than the 16-bit version.

Features include a portable architecture, object library support and exception handling.

Smalltalk/V Version 2.0 for Win32 costs $995.

▶ *Digitalk*
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Micro Focus has announced its Software Development Kit (SDK) program for 32-bit OS/2 and Microsoft Corp.'s Windows NT operating systems.

According to the Palo Alto, Calif., company, the Micro Focus 32-bit SDK provides a powerful environment for creating 32-bit Cobol applications and for migrating existing 16-bit applications to a 32-bit execution environment.

The SDK costs $2,500.

▶ *Micro Focus*
(415) 856-4161

DOD software reuse

CONTINUED FROM PAGE 73

term, enterprisewide reuse program, one that develops software with the forward view that it will be reused.

The problem is that it costs significantly more up front to prepare software for reuse because it must be generalized for different uses, certified for reuse and more thoroughly tested and documented. A project manager facing a tight schedule or a division head under pressure to meet a quarterly budget may not care that code written today may be useful again years later.

"Corporate culture and organizational infrastructure must be changed to reward reuse and overcome disincentives," McClure says.

Repositories may include not only code but also application-specific knowledge, designs, algorithms, test plans, test data and documentation. Some experts argue that reusing code — which is dependent on language, hardware and implementation approach — is not where the greatest leverage lies.

For example, KnowledgeWare, Inc.'s Philip Kiviat, vice president of federal programs in McLean, Va., says, "You should reuse designs, not code. Code is perishable. Reuse components that are further upstream."

Another advantage of centering a reuse strategy around higher-level elements is that those elements may be able to automatically create lower-level components.

Nevertheless, proponents of object-oriented languages point out that big productivity gains are available through the use of reusable objects, with or without reusable designs. "Shared 'black-box' objects of prewritten and pretested software code ... can be used again and again in subsequent generations of an application," said San Francisco-based Montgomery Securities in a recent report on business re-engineering.

closer look
Reusable software

Domain analysis

A successful reuse program requires careful "domain analysis," in which one studies a domain such as payroll and determines which components are most suitable for reuse. The analysis is vital, experts say, to avoid a costly and unmanageable approach that seeks to put everything in a reuse library.

Failure to do systematic and rigorous domain analysis accounts for the failure of many corporate reuse programs, according to Arthur Pyster, chief technology officer at the Software Productivity Consortium in Herndon, Va.

"Five or six years ago there was this naive view you could just assemble lots of parts and the world would be better," he says. "People tried to use those libraries, and they couldn't find what they needed and they couldn't understand what they got."

Using techniques akin to those used in business process re-engineering, IS organizations should do domain analysis to derive reusable architectures — high-level designs — that are far more valuable than reusable code, Pyster says.

It is sometimes possible to extract reusable logic and data designs from existing code by reverse-engineering. Microelectronics and Computer Technology Corp. in Austin, Texas, has tools for "harvesting" reusable software designs from existing applications.

Other tools have recently emerged that can help get more mileage out of old code. For example, Texas Instruments, Inc. and KnowledgeWare just introduced tools that analyze legacy Cobol programs and propagate chunks of reusable code into computer-aided software engineering tools for use in new client/server applications.

Raytheon reuse program

Raytheon Co. in Lexington, Mass., has had a disciplined reuse program in place since 1976 and said it has perfected the program to the point where the company gets 80% to 90% of new business applications from reusable components.

Raytheon originally wrote eight basic shells, or "logic structures," for the major processing parts found in business applications. The shells consist of a high-level design and some code. Raytheon's library now contains 143 program shells in combinations such as sort/select/edit/update/report.

In addition, over the years Raytheon has built a library of nearly 2,000 "functional modules" — chunks of reusable code for data definitions, edit rules, business algorithms, database calls and the like.

According to Robert Lanergan, corporate information systems manager, 40% to 60% of a new Cobol application can be generated interactively from one of the shells. An additional 30% to 40% can be obtained from inserting various functional modules.

Code can not only be developed much faster with this scheme but is also far easier to maintain because it is standardized and therefore widely understood, he said.

Lanergan said implementing the reuse program was "a tough sell," especially to veteran programmers who feared it would strip the creativity and independence from their jobs. His advice to companies considering such a program: "Hire programmers right out of college; they are not set in their ways."

— Gary H. Anthes

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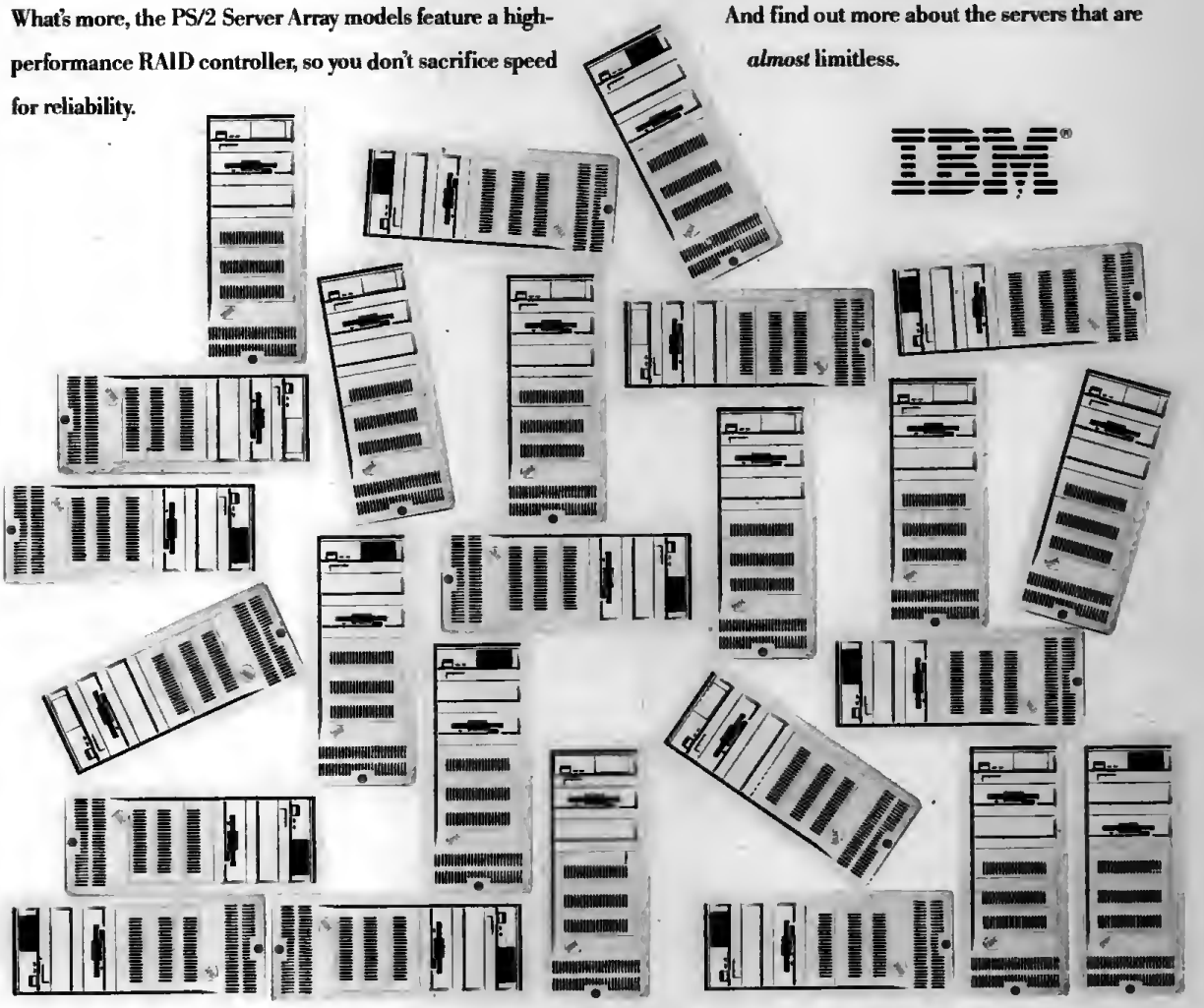

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NextStep 3.2 gets DOS, Windows support

By James Daly

Next Computer, Inc. has spruced up its NextStep system software for Intel Corp. processors by adding support for DOS and the Windows environment.

Both the single-user and the developer's version of NextStep Release 3.2 will gain DOS and Windows compatibility via Insignia Solutioos, Inc.'s SoftPC for NextStep. A version of SoftPC containing both Windows 3.1 and DOS 5.0 will come with each copy of NextStep and work for 30 days after initial boot-up. If NextStep users decide after a month that they want the added DOS and Windows compatibility, they can call Insignia to receive a license number that will unlock an unlimited working version. A single-user license costs $249.

Release 3.2 also includes additional driver support, which increases the number of hardware configurations NextStep can address. New to Release 3.2 is DriverKit, an object-oriented framework that enables developers to write device drivers in less time and with less code than traditioonal methods of writing Unix drivers, Next officials said.

The updated NextStep also includes application programming interfaces that allow sonod, graphics and LAN devices to be supported by dynamically loadable drivers. Also added is support for a variety of new graphics adapters and — for the first time — full support for 32-bit color graphics.

Developer's version

The developer's version of NextStep 3.2 contains a new FileMerge feature. FileMerge is used to compare two directories and show which files have beeo added, deleted or modified. For a pair of lines that are different, the applications will show them side by side and highlight the differences.

The developer can choose to create a third file and selectively merge the files. Using this tool, a developer is able to quickly merge changes from different source branches with only a few mouse clicks.

The developer's release also includes support for Portable Distributed Objects (PDO) — high-level objects that can be transported over a network. With PDO, developers create custom objects that can be deployed in heterogeneous server environmeots and shared throughout the networks.

Pricing for NextStep for Intel processors and NextStep Developer is $795 and $1,995, respectively. Pricing for upgrades is $195 and $495, respectively.

Customers who purchased the full version of NextStep Release 3.1 and returned the registration card before Oct. 31 will receive Release 3.2, which is shipping now, for free.

Big market seen for objects

Object-oriented programming will be one of the biggest advancements in software development in the 1990s. The market is expected to grow 67% annually to become a $4 billion market by the end of 1997, according to a report released by Datapro Information Services Group, a research house.

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"HI! I'm your consultant from HELL"

BY MELANIE MENAGH

Peter Johnson has a lot to say about his experiences with consultants: "We have plenty of horror stories."

Johnson, who is vice president of information systems at the Dartmouth/Hitchcock Medical Center in Lebanon, N.H., recalls a particularly devilish experience:

"We hired people to help us analyze what other academic medical centers in the Northeast were doing. We run our equipment in a clinical setting; we're a life-and-death operation. That's why we wanted the consultants to come work with us here, but these guys were not particularly sympathetic to that. They felt since they were doing an analytical piece, they didn't have to perform on-site. So they took the work back to Baltimore."

Unfortunately, "they didn't know our procedures. They didn't follow our protocols," Johnson says. The medical center had fail-safe procedures built into its system to prevent major blowouts to databases. Anyone working on software development is authorized to work only on test environments.

"Our consultants should have been working on a test environment, but the programmers thought, 'We'll just dial into the system.' They crossed over to a production environment — on their own reconnaissance. Our practices weren't considered.

"They made changes to software that caused

Consultants, *page 80*

Consultants

CONTINUED FROM PAGE 79

us to lose data, which in turn caused the system to crash," Johnson says.

As a result, the pharmacy department was unable to access data on patient medications for several hours. Fortunately, the crash didn't prove fatal to the databases (or the patients), but clearing up the wreckage required more time and money.

"We have a certain awe for 'experts,' and perhaps they have a bit of awe for themselves because they took it upon themselves to tap into the system without asking questions first," Johnson says.

Recurring nightmare

This scary episode is hardly an isolated case. Although IS managers say that experts hired to help them usually do so in a reasonable time at a reasonable price, consultants' activities often produce precisely the opposite results.

Bad advice, shoddy work and revolving-door personnel all contribute to overruns of time and money. Managers admit that sometimes they deserve part of the blame. But all too often, even when they follow the conventional advice about managing consultants — defining projects carefully, setting up tight time limits and cost controls, insisting on qualified firms and periodic reviews — the results have been disastrous.

Professional advice caused another frightful mess at Reynolds Metals Co. in Richmond, Va. The company was looking for point-of-entry inventory systems to track incoming items for proper distribution. What it got instead was "a nightmare," says Jim Matsey, corporate director for IS.

Matsey called in consultants who said they could do the job in less time for less money than Reynolds could in-house, so Matsey decided to go with them. He even hired a division of a firm that he had worked with successfully for years. They hammered out a good contract, with cost caps and periodic reviews. But trouble was brewing.

The project became a classic case of corporate IS procedure ignored, circumvented or gone awry at every turn.

"Things weren't right up front. They were incompetent," Matsey says. "We could see things weren't headed in the right direction, and we held meetings with them saying, 'You can't get to it that way.' "

This advice was to go avail. "They weren't honest with us," Matsey says.

"Originally, they told us we could run this on X-size of machine. When we did, the response time was really bad. Then they admitted that, 'No, you really have to put it on a bigger machine, and since we tier-price our work, you're going to have to pay us more to put it on the other machine.' "

> **"YOU CAN'T JUST SAY TO THEM, 'THERE'S MY WALLET, RUN AROUND AND DO WHAT YOU WANT WITH IT.'"**
>
> Sid Diamond, Diamond & Associates, Stevenson, Md.

Small bills started trickling in, but when the project dragged on, a couple of whoppers arrived.

"I said, 'Wait, we have a cap. You can't overrun without my signature,' " Matsey recalls. "They insisted that the mere fact we challenged the bills meant we acknowledged their validity."

Matsey wanted to cut his losses and run but had to stay in the arrangement because the consultants withheld software that Reynolds needed. The project ended up costing twice what was agreed on and put the entire program a year-and-a-half behind schedule.

By the end, Matsey says, "I was in Atlanta with our lawyer and their lawyer back and forth with innuendos and accusations."

And as it turned out, Reynolds' troubles were not unique.

"We found out that another company working with this firm at the same time ended up suing them," Matsey says. "We decided just to pay and get the hell out."

No guarantees

Paying top dollar for a top banana does not always ensure success. When VF Corp. in Wyomissing, Pa., the maker of Lee jeans, needed new software, it brought in a big-name firm "because the people presenting had significant product knowledge and good suggestions of where to go for solutions," says H. Lynn Hazlett, vice president of business systems at VF Corp.

However the working relationship "went downhill from there," Hazlett says. "They changed consultants during the process to accommodate other customers — it was like musical chairs. There was constant disruption, constant retraining of their people and ours."

Not surprisingly, the end product was a total washout.

Managers complain that the experts make only superficial attempts to understand the client's business.

"We brought in people to look at the possibility of outsourcing our IT environment," says James Miller, vice president for information technology at Hallmark Cards, Inc. in Kansas City, Mo. "They said, 'Well, you're sort of a paper company, and we kind of did this with another company before.'

"Ninety-eight percent of their slides in their presentation were used the day before with another client; they tried to give us a boilerplate solution for our problems. When we confronted them, they basically responded with smoke and mirrors. Instead of working toward a common goal, they were just trying to cover their ass."

Games people play

The consultants' ploys didn't stop there.

"They infiltrated the company and made suggestions to other parts of the organization. While IT was looking at outsourcing one way, they were busy soliciting another department to outsource in a way that created cross-functional conflicts with ours. There was a total lack of integrity. I wouldn't use them again if they were the last vendor on the planet," Miller says.

"My definition of 'expert?' " says Michael Simmons, former executive vice president of technology and operations at the Bank of Boston: "X is an unknown quantity, and spurt is a drip under pressure."

Other IS executives offer stronger epithets — some not suitable for print.

Miller says of his experience hiring consultants: "I'd probably split it 80/20 — 80 were marginal or negative."

Managers who have been to hell and back have come away with a more pragmatic, realistic attitude.

"A consultant's mission is to bill you as much as possible for as long as possible," Simmons says. "If you don't realize that going in, you're in for trouble.

"You have to match expectations with reality," Matsey says. "There's a disconnect between the sizzle people expect and the substance of what a consultant can actually accomplish."

Going into each relationship understanding the possible dangers and with a firm grip on the reality of what the experts can do for you — and to you — will make hiring a consultant a smart move instead of a pact with a devil. ■

Menagh is a free-lance writer in Summit, N.J.

BEYOND THE BASICS

How to avoid infernal consultants

While fail-safe procedures are well-known — and were followed by all the people whose experiences are quoted herein — they are often not enough to guard against consultants from hell.

What else can be done when standard precautions are not enough? Consider the following advice:

After "price and function," says David Morgan, director of IS for the city of Dallas, "we look for quality people. We hired a firm that gave us a good program, but it wasn't user-friendly because they forgot to figure in the average city clerk working on the system. They should have considered all our users and trained them better."

Feedback is essential throughout the process, says Sid Diamond, president of Diamond & Associates, a consulting firm in Stevenson, Md. Diamond formerly managed IS for Purolator Products Co., Bristol-Myers Squibb Co. and Black & Decker Corp.

"Now that I'm on the other side, it's surprising how many clients don't ask me questions they should. Often a feedback channel is set up but never used properly. Feedback needs to come from all sources, from the consultant, but also informal feedback from within your organization.

"Find out the relevant experience of the person who's going to be on the job, not the account rep," Diamond says. "They may have 10,000 people, but not all are going to be that great. The company is less important than the person working for you. Protect yourself in the contract with right of refusal of anyone working on the account."

Insist that consultants work on-site. Even if it costs a little more, it can save time, money and frayed nerves in the long run, says Peter Johnson, vice president of IS at the Dartmouth/Hitchcock Medical Center.

"If they are here, they ask questions. They have to check with more people," Johnson says. "They're less likely to make huge errors in protocol."

If the consultants can't do all the work on-site, they should at least spend enough time there "to build a rapport with your people, to get under the covers and understand the details of your business," says James Miller, vice president of information technology at Hallmark Cards in Kansas City, Mo.

"It's not enough to have them pull personnel out and interview them in another place, completely out of context," Miller says.

When using a large firm, keep close tabs on personnel. "Always establish a relationship with someone high up — a senior partner — to be sure your interests are properly looked after," says H. Lynn Hazlett, vice president of business systems at VF Corp.

— Melanie Menagh

Executive Track

William C. Donovan has been named vice president of information technology and a member of the senior management committee at **Sea-Land Service, Inc.** in Liberty Corner, N.J. Donovan, who has jointly led this function since 1992, assumes full responsibility for the firm's global information technology group. Prior to rejoining Sea-Land in 1992, Donovan worked at RJR Nabisco, serving in six senior positions in information technology.

Thomas D. Murphy, Sea-Land's former vice president of information technology systems and co-head of the group, is moving to Kroger Co. in Cincinnati as vice president and chief information officer. Murphy joined Sea-Land in 1990 and has co-managed the information technology group with Donovan since 1992.

Amtrak, the national railroad passenger corporation in Washington, has announced the appointment of **Donald G. Gentry** as vice president of information systems. He replaces Norris W. Overton, who was promoted to chief financial officer. Gentry was formerly assistant vice president of systems development.

James T. Pollard has been appointed senior vice president and chief information officer at **Tech Data Corp.** in Clearwater, Fla. In this newly created position, he will report to President and Chief Operating Officer A. Timothy Godwin. Pollard was previously director of information systems at Florida Power Corp. in St. Petersburg, Fla.

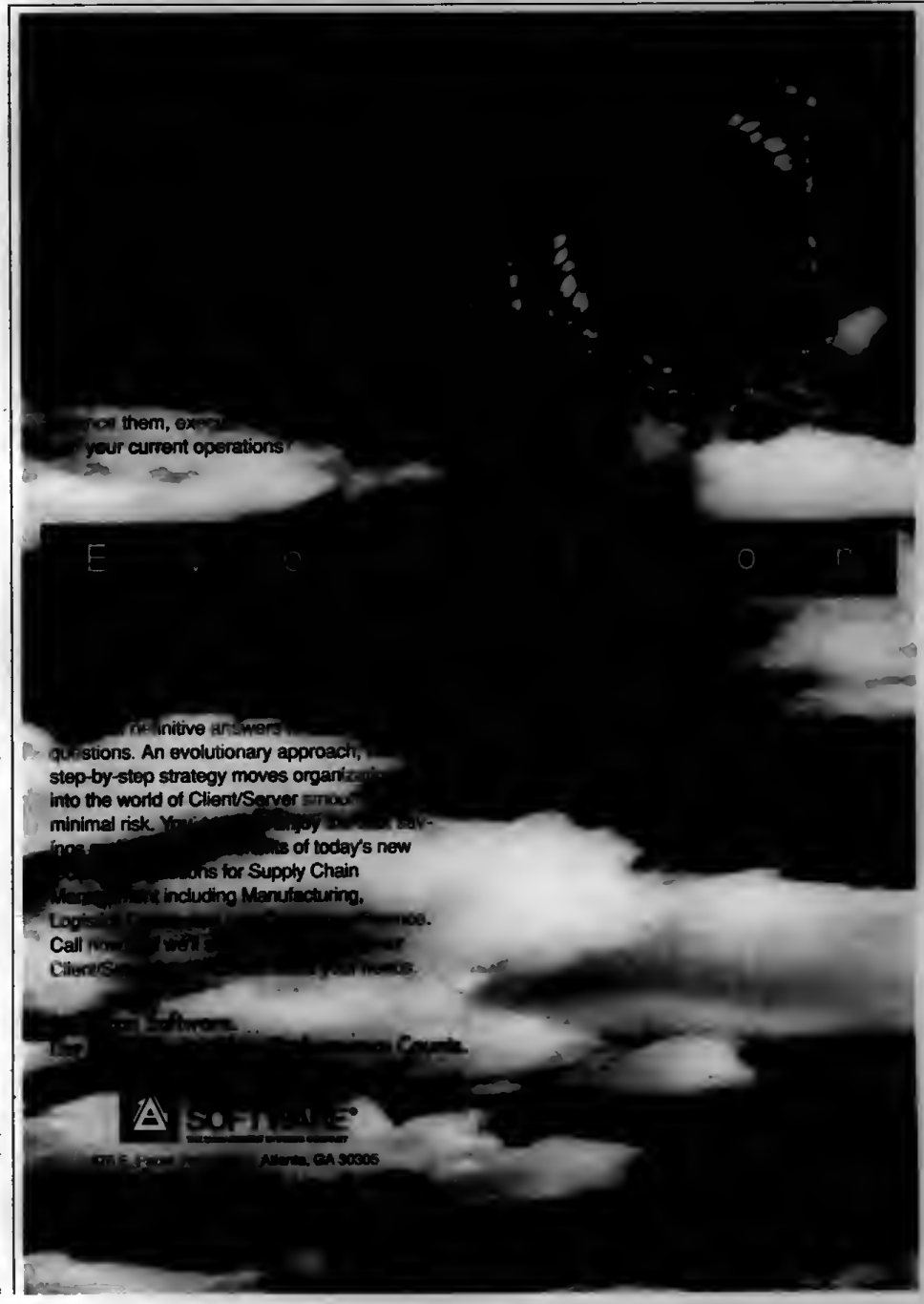
Nancy Miracle has been named vice president of operations at **NewWorth, Inc.** in Irving, Texas. She was previously director of operations and MIS at Fujitsu Personal Systems in California.

Visa International has announced the appointment of **William L. Chenevich** as group vice president of VisaNet service development, a department that represents one-third of the corporation's delivery systems organization. Chenevich will be based in San Francisco and will report to Roger Pierce, executive vice president of international delivery systems. He will oversee development of credit, debit and risk control systems. Chenevich was previously executive vice president and director of information systems at Home Savings of America.

The National Association of State Information Resource Executives in Lexington, Ky., has announced several recent appointments and member changes. **George Beard**, former manager of planning and policy in the Information Systems Division in Oregon, has taken a position in the private sector; **Bev Schuft** has been named acting director of the Information Policy Office in Minnesota, replacing Steve Gammon; and **Pat Urban** has been named director of communications and information technology in Vermont. The association also elected **Bradley S. Dugger** president for 1993-94. Dugger is chief of information systems at the Department of Finance and Administration in Tennessee.

Marcia Lissak has joined **Richard A. Eisner & Co.**, a New York-based accounting firm, as director of its apparel consulting practice. Lissak had been director of information services at Donna Karen in New York.

NPRI, Inc., a call center systems vendor in Alexandria, Va., has announced that **Louis A. Venezia** has been appointed vice president of business operations. As part of NPRI's companywide reorganization, internal MIS functions and other functions will report to Venezia.



Intelligence Files

Banner week at CSC

While Computer Sciences Corp. (CSC) emerged as the finalist in the British Aerospace PLC outsourcing sweepstakes in mid-November, it also reported a couple other cork poppers. The El Segundo, Calif.-based services company said it entered a five-year, $90 million outsourcing contract with RAET, a $377 million Dutch information technology services company.

The deals add people and data centers to CSC's wherewithal, giving it sudden leverage in Europe. The same week, CSC said it won a $10 million contract from the U.S. Department of Defense (DOD) to help move the DOD to open systems.

Source: Computer Sciences Corp.

New York Times recruiting

The New York Times Co. is offering an interactive system for employers to advertise jobs and candidates to send in resumes.

Information Kinetics, Inc. in Chicago developed and will administer the service, called New York Times FasTrak. An Information Kinetics spokesman said the system is the company's first in operation for a newspaper, although the company said it signed a preliminary agreement with the *Chicago Tribune* in June.

FasTrak, which began last month, lets job seekers register their resumes in a database at the newspaper for a $40 fee. For six months, they can answer recruitment ads in the newspaper using a phone to send their resumes into a database. Advertisers will periodically receive updated disks containing the resumes. Companies will also be able to place candidate requests through the system.

Source: *The New York Times*

The virtually real hotel stay

The Hyatt Corp. hotel chain is experimenting with a "hotel of the future" in Schaumburg, Ill., that could redefine the "quick check-in" concept to "no check-in." According to *Fortune* magazine, part of the futuristic vision for the hotel is a wireless technology that allows hotel employees to perform tasks from any location, including checking in guests who prefer not to do so themselves.

The hotel industry is also looking into virtual reality marketing techniques such as helmets with built-in screens that allow prospective customers to see the rooms and facilities of a variety of hotels and resorts in their destination area.

Source: *Fortune* magazine, Oct. 4, 1993

Profitable companies

Businesses that have seen their profits increase in the last 24 months are more likely to understand and quantify the business benefits of information technology, according to a survey recently released by the Keystone Group, a management consulting firm in Evanston, Ill., that specializes in the strategic use of information technology.

The survey targeted chief executive officers who head either "profit-up" companies (profits rose in the past 24 months) or "profit-down" companies (profits decreased in the past 24 months). It addressed the questions of why some companies realize a greater return on their information technology investments and whether there is a correlation between technology return on investment and overall profitability.

Among the survey's other findings were that 76% of CEOs at profit-up companies said information technology affects business processes vs. 20% of profit-down company CEOs, and 80% of profit-up company CEOs said they will manage cultural change in future implementations vs. no CEOs from profit-down companies.

Source: The Keystone Group

Technology buy-in

Retailers are buying into the improvements that information technology can bring to their service and cost-reduction efforts. According to a study conducted by Computer Sciences Corp., senior business and information systems executives feel the worst of the recession is over. They also see information technology as a critical part of their efforts to streamline their businesses.

Source: CSC Consulting, Waltham, Mass.

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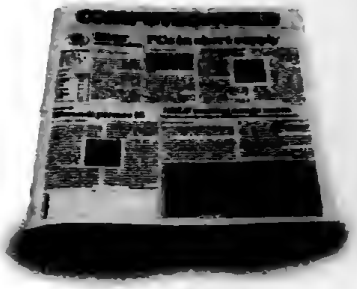

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Calendar

JAN. 2-JAN. 9

Third Annual ShowBiz Expo. New York, Jan. 6-8 — Contact: ShowBiz Expo, Los Angeles, Calif. (213) 668-1811.

1994 International Winter Consumer Electronics Show. Las Vegas, Jan. 6-9 — Contact: Electronic Industries Association, Washington, D.C. (202) 457-8728.

JAN. 9-JAN. 15

ObjectWorld. Boston, Jan. 10-13 — Contact: World Expo Corp., Framingham, Mass. (508) 879-6700.

JAN. 16-JAN. 22

Client/Server Conference & Exposition. San Jose, Calif., Jan. 18-21 — Contact: CMP Conference & Exhibit Group, Manhasset, N.Y. (516) 562-7460.

Re-engineering: The Implementation Perspective. Boston, Jan. 19-21, also to be offered Feb. 9-11 — Contact: Hammer and Co., Cambridge, Mass. (617) 354-5555.

Storage & Interfaces '94 International Technology Conference. Santa Clara, Calif., Jan. 19-27 — Nine separate but related forums and seminars will be offered during these dates. Contact: Technology Forums, St. Peter, Minn., (507) 931-0967.

Nomda/Landa Emerging Technologies Expo '94. Orlando, Fla., Jan. 20-22 — Contact: Nomda/Landa, Kansas City, Mo. (816) 941-3100.

JAN. 23-JAN. 29

Demo '94. Palm Springs, Calif., Jan. 23-26 — Contact: InfoWorld Editorial Events, San Mateo, Calif. (415) 312-0545.

ComNet '94. Washington, Jan. 24-27 — Contact: World Expo Corp., Framingham, Mass. (508) 879-6700.

Fourth Annual "Achieving Quality Software" Tutorial and Conference. San Diego, Jan. 26-28 — Speakers include Barry Boehm, University of Southern California, and Ron Radice, director of the Software Process Program. Contact: Vince Heald, Beck-Ellman Agency, La Mesa, Calif. (619) 469-3500.

10th International Conference on Engineering Information Systems: Product Data Management & Alternatives. Dallas, Jan. 26-28 — Contact: Management Roundtable, Boston, Mass. (617) 232-9080.

JAN. 30-FEB. 5

14th Annual Florida Educational Technology Conference. Tampa, Fla., Jan. 31-Feb. 4 — Contact: Bureau of Educational Technology/Florida Education Center, Tallahassee, Fla. (904) 488-0980.

Executive Technology Summit '94. Sponsored by The Society for Information Management and *Computerworld*. Tarpon Springs, Fla., Feb. 2-4 — Contact: ATI Travel Management, Chicago, Ill. (312) 644-6642.

FEB. 13-FEB. 19

Sigda: Workshop on Field Programming Gate Arrays. Berkeley, Calif., Feb. 14-15 — Contact: Association for Computing Machinery, New York, N.Y. (212) 944-1318.

Conference on software quality calls for papers

A call for papers has been issued for the 12th Annual Pacific Northwest Software Quality Conference, which will be held Oct. 17-19, 1994, at the Oregon Convention Center in Portland.

Abstracts on any topic relevant to software quality are invited and should be sent to Sue Bartlett, Tektronix, Inc. MS 63-356, P.O. Box 1000, 26600 SW Parkway, Wilsonville, Ore. 97070-1000. Deadline for submission is March 7, 1994. For more information, contact Terri Moore at (503) 223-8633.

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THE STATE OF OPEN SYSTEMS '93

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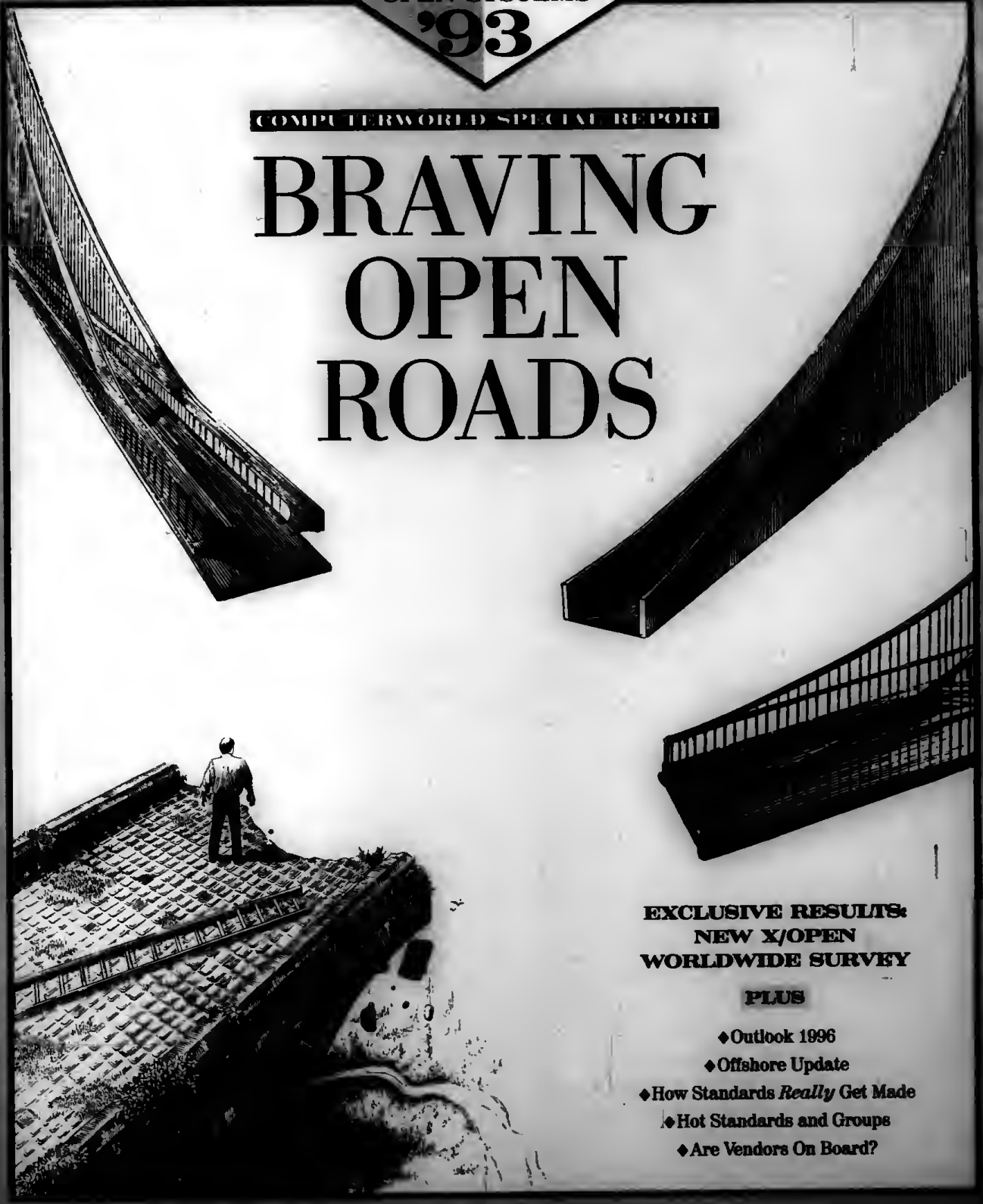

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THE STATE OF OPEN SYSTEMS 93

EDITOR'S NOTE

SIGNPOSTS ALONG THE ROAD

You've got the whole wide open world in your hands — literally.

This special *Computerworld* X/Open supplement presents results of the largest and most ambitious global survey on open systems ever done: five continents, 56 user groups and 780 top information systems managers and professionals.

You'll notice a couple of important things about this special report. First, our stories go way beyond reporting survey findings. In the pages that follow, IS chiefs from leading firms tell where they're headed, why and how. No vapor. Top experts in the field contribute haze-cutting analysis in four incisive "Perspective" columns.

Second, we've tried to be hard-headed and critical in the best sense of the words. The last thing the industry needs today is more open systems smog.

Finally, our coverage has a distinct U.S. focus. Although globalism is a major strength of the Xtra study, we've opted to tell the story mostly through the eyes and experiences of our own readers. With a topic so complex, exciting and fast-changing, it's the only realistic thing to do. (Full worldwide survey results will be presented at X/Open's annual meeting in Rome later this month.)

Regardless of location, the study shows clearly that the bumpy road to open systems continues to swell with hopeful travelers. Some are fast-laners. Others putt along more cautiously. Most are simply trying to keep pointed in a new direction, adding parts as they go. Ultimately, all seek lower costs and higher performance via the best path they can find.

As you read the following pages, you'll be struck by the sheer determination of companies. The next couple of years will tell whether these journeyers (and you) will make it to more open roads. And whether computer industry vendors will ride in the front seat, backseat or under the wheels.

While we can't tell you exactly how to get there from here, we can give you some valuable signposts for the trip.

Keep on driving.

Joseph Maglitta
Senior editor, corporate strategies

THE STATE OF OPEN SYSTEMS '93

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VENDORS: CRYBABIES OR BUNDLES OF JOY? PAGE 115

ASSOCIATED GROCERS MAKES OPEN WORK. PAGE 113

HOW STANDARDS REALLY GET MADE. PAGE 109

OVERVIEW MAKING IT WORK

91 OPEN ENOUGH. Frustration yields to pragmatism as users make do. ♦*By Frank Hayes*

92 Exclusive Xtra survey results.

94 Offshore report: Europe and the Pacific Rim.

95 PERSPECTIVE: Peter Keen on "It's time to get together."

MARKET NONSTANDARD STANDARDS

99 DEFACTO IS DE STANDARD. Despite grand plans and international guidelines, standards are what sells. ♦*By Amy Bermar*

101 Nonstandard procedures. Why is it so darned hard to make good standards quickly? ♦*By Ted Krum*

104 Guide to key standards: Everything you need to know. ♦*Compiled by Jonathan Eunice*

108 PERSPECTIVE: Michael Goulde on "An open proposal."

USERS TALES FROM THE ROAD

113 WORKAROUND. How top companies are making open systems work today. ♦*By Jean S. Bozman*

117 You mean we gotta support it, too? ♦*By Alan Radding*

118 PERSPECTIVE: Rich Malone and Jim Stikeleather on "Open and shut."

VENDORS HOW OPEN IS OPEN?

119 IS BEING HALF OPEN LIKE BEING HALF PREGNANT? Vendors swear fidelity to open systems. Users and consultants say "show me." ♦*By Michael Vizard*

120 Users rank major Unix variants.

122 PERSPECTIVE: Bill Laberis on "Chart your own course."

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THE STATE OF OPEN SYSTEMS '93

MAKING IT WORK

CHRISTOPHER BING

FRUSTRATION YIELDS TO PRAGMATISM AS USERS MAKE DO

OPEN ENOUGH

BY FRANK HAYES

David M. Sherr is the very model of a modern open systems champion. But you have to look hard to tell. True, as a vice president for investment banking technology at Lehman Brothers, Inc., Sherr is responsible for making certain programmers write to standard interfaces, heterogeneous hardware works together in harmony and his users can choose whatever information systems they need.

But what exactly constitutes Lehman Brothers' idea of an open systems environment? "Our 'open systems' have Novell SAA servers on [IBM] Token Rings that go into VM," Sherr says. Beyond that, Novell, Inc. networks and Unix servers link with huge networks of PCs and Unix systems. "Our mainframe people here talk about downsizing," Sherr says. "But they're still planning to quadruple the capacity of the data center."

Welcome to the world of today's open systems, where mainframes and proprietary networks share equal billing with hardware and software that was designed to meet officially accepted formal standard specifications. It's a place where pragmatism, frustration and confusion have replaced philosophical certainty about what "open" means.

But it's also where users are getting more real work done using open systems than ever before — in part because they're reshaping their definitions as well as their information systems.

"People have moved away from a purist's view," says Burt Rubenstein, a vice president at Cambridge Technology Partners, Inc. in Cambridge, Mass. "They're just being practical about what's really out there."

HOW DO YOU DESCRIBE OPEN SYSTEMS?

SCALE: 1 - DOES NOT DESCRIBE
5 - BEST DESCRIBER

Interoperable	5.2
Vendor-independent	5.1
Portable	5.0
Published de facto or de jure standards	1.8
Publicly defined technology interfaces	1.8

SURVEY BASE: 780 IS EXECUTIVES

SOURCE: X/OPEN CO

Vendors draw heat

The X/Open Co.'s new Xtra global survey of 780 high-level IS executives clearly illustrates the frustration that is causing more and more companies to take their open systems fates into their own hands.

Respondents blamed vendors and standards-making organizations alike for being stumbling blocks along the open road: vendors for failing to provide compatible, standards-based products and standards groups for producing too many overly complicated specifications (see story page 101).

"If your information technology group was trying to hold the line, waiting for implementations of well-defined open systems, they would

OPEN ENOUGH, PAGE 92

ALAN LEVENSON

♦ Rockwell International's James F. Sutter: While waiting for well-defined open systems standards, 'frustration sets in and pragmatism follows'

OPEN ENOUGH

CONTINUED FROM PAGE 91

be overrun by events. Then frustration sets in and pragmatism follows," says James F. Sutter, vice president of IS at Rockwell International Corp. in Seal Beach, Calif.

Organizational pressures are another big factor. "Our business people are learning to move ever quicker, and the information technology people have to be out in front to enable them to move more quickly than they ever have before," says Jim White, vice president of technical planning at Charles Schwab & Co. "We want more, faster — we need that just to stay up."

As a result, many IS executives are rethinking the usefulness of both open systems and standards.

"If you say, 'I can't write my message-handling system until X.500 is a reality,' you're never going to write it," Sherr says. "All the standards can do is reduce the amount of work you have to do. They're not going to do the work for you."

No longer willing to wait for standards organizations to fill in the holes in the open systems framework, users are creating their own architectures and populating them with existing proprietary systems and popular de facto standards, along with products based on formal standards.

Ken Rohan, vice president of IS at Nerco, Inc., an oil, gas and mining company in Portland, Ore., says, "Bottom line, sooner or later you need to choose what are going to be your own internal standards."

Incompatible products

That's a far cry from the open systems ideas of just a few years ago. Back then, standards came from standards committees, and by insisting that vendors conform, customers could choose among many interchangeable, competing products for each part of their IS architecture — in theory.

But in practice, "standardized" products often remain incompatible. "The international standards bodies have created a framework for open systems, and it's very appealing," Sutter says. "But if you simply say, 'Well, let's adopt that framework, let's implement those standards' — that's very frustrating."

Making matters worse is continued confusion about what "open" really means. Most respondents equate the concept with portability and vendor independence (see chart previous page). But even that definition is far from universal.

USERS ARE

getting more real work done — in part because they're reshaping their definitions as well as their information systems.

"X/Open wants you to think open means developing an API that is going to be easily portable across multiple hardware platforms," says Tom Kucharvy, president of Summit Strategies, Inc., a Boston-based consulting firm. "In the PC environment, there's a totally different definition of standards: one API from one vendor that provides total hardware flexibility. I'm not sure which is a better definition of open. It's now in the eyes of the customers."

Even when standards exist, many don't stand up well when turned into products. "People buy a SQL-based database so they think they have industry-standard SQL that will run on any platform. Wrong!" says Judith Hurwitz, editor of the "Client/Server ToolWatch," a newsletter based in Watertown, Mass.

"People went into this whole open systems era believing standards were magic and that it was easy," Hurwitz says. "But there's nothing that's '1-2-3, you're saved.' You can build according to standards, but it's a lot more complex."

Lack of interest isn't the problem: Worldwide sales of Unix operating systems hit $1.2 billion last year, according to International Data Corp. And respondents to the X/Open survey said they plan to nearly double their spending on open systems by 1996 (see chart at right).

Even so, uncertainty plagues many users.

OPEN ENOUGH, PAGE 95

EXCLUSIVE RESULTS of a major new X/Open survey of 780 information systems managers on five continents reveal that a major global shift to open systems is in full swing. But user attitudes are decidedly pragmatic: If open systems are the best way to drive key business goals, fine. If not, the next three years will tell whether open systems benefits outweigh barriers.

ABOUT THE RESPONDENTS

TITLE

♦ IS director/manager, 51%; technical support staff, 7%; CIO or other executive officer, 10%; technical/operations/applications manager, 13%; chairman/CEO/managing director, 5%; engineering manager, 4%; consultant/adviser, 4%; other senior executive, 3%; other, 2%; other non-IS manager, 1%.

RESPONSIBILITY

♦ Entire company/organization, 55%; one department, 16%; one subsidiary, 9%; multiple divisions or subsidiaries, 7%; multiple departments, 7%; workgroup or department, 6%.

INDUSTRY

♦ Other, 12%; manufacturing (discrete), 11%; manufacturing (process), 11%; professional services, 10%; education, 9%; government, 8%; communication, 7%; finance, 7%; other services, 8%; utilities, 4%; transportation, 3%; insurance, 3%; agriculture/construction/mining, 3%; health care, 2%; wholesale trade, 2%; retail, 2%.

REGION

♦ Respondents included users from the U.S., Canada, Europe, Middle East, Japan, Asia, Africa and South America. Final results were weighted by Gross Domestic Product to reflect the concentration of information systems usage in various regions.

ANNUAL COMPANY REVENUE (U.S. DOLLARS)

♦ Less than $5 million, 12%; $5 million to $9.9 million, 5%; $10 million to $24.9 million, 7%; $25 million to $49.9 million, 8%; $50 million to $99.9 million, 6%; $100 million to $249.9 million, 10%; $250 million to $499.9 million, 8%; $500 million to $999.9 million, 9%; $1 billion to $10 billion, 22%; over $10 billion, 13%.

ANNUAL IS BUDGET

♦ Less than $500,000, 19%; $500,000 to $999,999.9, 11%; $1 million to $4.9 million, 20%; $5 million to 9.9 million, 7%; $10 million to 24.9 million, 12%; $25 million to $99.9 million, 17%; $100 million to $1 billion, 12%; over $1 billion, 2%.

ANTICIPATED ANNUAL IS BUDGET GROWTH (1993-1996)

♦ Negative by more than 10%, 6%; negative by less than 10%, 10%; flat or no change, 32%; positive by less than 10%, 38%; positive by more than 10%, 14%.

TOP 3 BUSINESS GOALS (1993-1996)

♦ Improve customer focus and service, 32.3%; improve operational efficiency, 29.4%; improve innovation and development, 25.1%.

TOP KEY SYSTEMS (1993-1996)

♦ Design and development, 32.1%; sales and marketing, 29.7%; administrative, 18.3%; manufacturing, 14.8%.

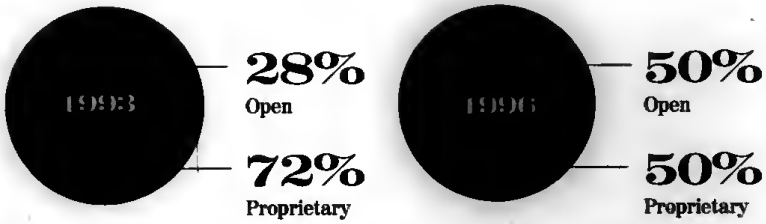
MAIL SURVEY CONDUCTED BY DATAQUEST, INC. BETWEEN JUNE AND SEPTEMBER 1993

OPEN OR BUST

OPEN SYSTEMS SHIFT

WHAT IS THE PROJECTED SHIFT TO OPEN SYSTEMS OVER THE NEXT THREE YEARS?

PERCENT OF IS BUDGET



BIGGEST WINNERS FOR 1996

BASED ON BUYING PLANS

1. Microsoft's Windows NT
2. Object-oriented databases
3. OSF's DCE
4. OSI
5. Sun/HP's DOE

BIGGEST LOSERS FOR 1996

BASED ON BUYING PLANS

1. MS-DOS
2. Windows
3. Hierarchical databases
4. Macintosh
5. TCP/IP

PAYOFFS . . .

HOW MUCH DO YOU CONSIDER EACH TO BE A BENEFIT THAT OPEN SYSTEMS BRINGS TO YOUR ORGANIZATION?

SPECIFIED TOP CHOICES IN DESCENDING ORDER

1. Easy access to applications anywhere on the network.
2. Interoperability.
3. Software and data portability.
4. Availability of many applications.
5. Cost savings in hardware and software.

. . . AND PAINS

HOW MUCH DO YOU CONSIDER EACH TO BE A BARRIER TO THE ADOPTION OF OPEN SYSTEMS IN YOUR ORGANIZATION?

SPECIFIED TOP CHOICES IN DESCENDING ORDER

1. Vendors that provide proprietary/incompatible versions of open systems.
2. Cost of conversion from existing proprietary systems.
3. Too many competing standards.
4. Difficulty of conversion from existing proprietary systems.
5. Published standards too complicated or confusing.

OSI OBSTRUCTIONS

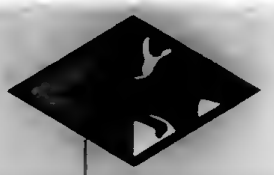
WHAT ARE THE OBSTACLES TO YOUR ORGANIZATION'S ADOPTION OF OSI?

SPECIFIED TOP CHOICES IN DESCENDING ORDER

Benefits of OSI not apparent to organization	47%
Installed base of other networks	42%
Products not available	36%
Lack of awareness of OSI in organization	29%
Available products not proved	29%

PERCENT OF RESPONDENTS
MULTIPLE RESPONSES ALLOWED

OFFSHORE UPDATE



EUROPE

AS IN U.S., PRODUCTS LAG USER DEMAND

PERCENTAGE OF COMPANIES THAT MANDATE PURCHASE OF OPEN PRODUCTS COMPLYING WITH INTERNATIONAL STANDARDS:

23%

European information systems managers want open systems to help overcome differences in technical culture. But user concerns about a lack of mature products and applications as well as tight budgets pose major obstacles to adoption.

Too bad, because unlike U.S. firms, European organizations are willing to forego short-term paybacks in favor of strategic benefits, says Alain Fastre, director of European operations at the Open Software Foundation in Brussels.

"Open systems is a good way to build an integrated computer architecture from different proprietary systems," says Christophe Binot, information technology architect at Elf Aquitane, a French oil and gas group with 780 companies worldwide.

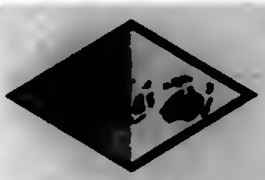
Elf hopes to gain economies of scale from negotiating companywide contracts. Moreover, a standards-based information architecture would give branch operations the autonomy to choose among a range of products that conform to standards, Binot adds.

While major multinationals in Europe are committed to open systems strategies, it's the public sector that is on the bleeding edge. Great Britain's National Health Service (NHS), for example, is considered one of the continent's most savvy user organizations.

The need to communicate among 14 regional health authorities with incompatible systems drove the NHS to an Open Systems Interconnect (OSI)-based architecture, says Seth Mason, senior information technology consultant. "The NHS grasped the nettle, and we're now two years into implementation of a strategy to have a nationwide OSI network for the health service."

The relative immaturity of vendors' OSI products has driven the NHS to set up its own interoperability testing lab. "I don't think we've implemented anything that we haven't had problems with interoperability and conformance to standards," Mason says, adding that vendors aren't testing their products properly. "When we find problems, they are usually fixable, but I'm a user and I shouldn't have to do that."

Written by Elizabeth Heichler, London-based European correspondent at the IDG News Service.



PACIFIC RIM

JAPAN SLOW, BUT UNIX GAINS FOOTHOLD IN REST OF REGION

PERCENTAGE OF COMPANIES THAT MANDATE PURCHASE OF OPEN PRODUCTS COMPLYING WITH INTERNATIONAL STANDARDS:

42%

Japan

In the largest Asian market of all, open systems are only beginning to take root.

Japanese computer users have been less inclined to look at open alternatives, thanks to the dominance of proprietary big-iron companies such as Fujitsu Ltd., Hitachi Ltd. and NEC Corp.

Another factor: a paucity of LANs. IDC Japan estimates the penetration of PC-based LANs in Japan at only 8% in 1992.

"Only 15% to 20% of our office computer [proprietary minicomputer] users are considering Unix," says Yukio Ono, general manager of open systems marketing at Fujitsu.

"While there are very few cases of customers replacing current proprietary systems with Unix," says Yoichi Kataoka, general manager at NEC's Workstation Marketing Promotion Division, "many are replacing current proprietary systems with Unix systems because it is more cost-effective than adding new mainframe capacity."

JDC Corp., a large-scale construction company and longtime NEC mainframe user, recently built a sales support system with Oracle Corp. and Informix Corp. databases running on an NEC Unix server. "We chose Unix because the start-up and maintenance costs are lower" than a host-based system, explains JDC's director of system development, Masatoshi Tomimatsu.

The predominant view in Japan of Unix as simply a cost-effective solution for implementing new applications differs from the U.S. view.

"In Japan, most companies tend to buy from a single vendor, so there is very little impetus to move to open systems from a multivendor standpoint," explains Takahiko Umeyama, senior analyst at IDC Japan.

Kiyoshi Ohta, an industry analyst at Nomura Research Institute, predicts that open systems will not take off in Japan until 1996 or 1997.

Pacific Rim

Unix and standards-based client/server systems are gaining a strong foothold in major Pacific Rim information technology markets.

Despite "a general shyness about bringing Unix into mission-critical and on-line transaction processing areas," notes Davis Blair, vice president at IDC Asia Pacific, "the advancement of open systems in Asia is definitely progressing." In many places, the spread of Unix is aided by strong government support.

Another boost: Client/server and Unix are well-suited to the small and medium-size operations in the region. Poor telecommunications presents a big stumbling block in some areas, however.

Australia

Industry experts say Unix acceptance is greater here than in the U.S.

IDC Australia predicts that sales of large-scale, multiuser Unix systems will increase at a compound annual growth rate of 24% during the next five years, compared to a 7% annual drop for similar-scale proprietary systems.

Popular support appears strong. John Everitt, MIS manager at upmarket retailer David Jones Ltd., explains: "Unix will save us money on software development because we can buy more packages off the shelf."

Taiwan

The government, eager to position itself as a major future exporter to mainland China, is developing a standard Chinese language specification that should result in greater cross-platform compatibility among Unix vendors.

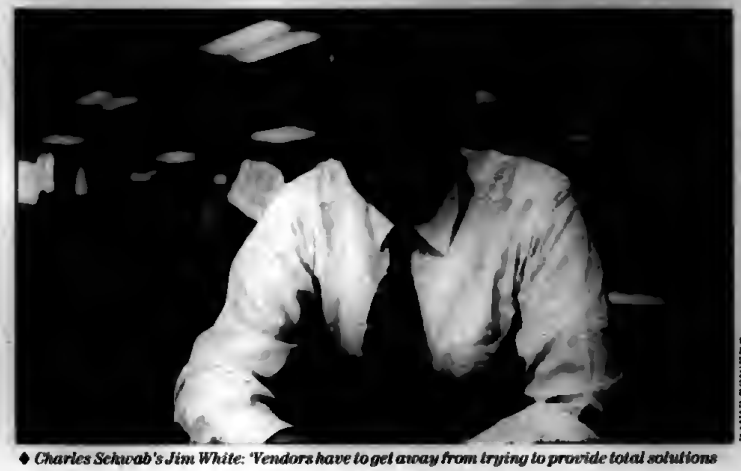
Hong Kong

The island's role as a major financial center requiring centralized processing has slowed Unix acceptance. However, English-speaking buyers have more freedom to pick and choose among products and brands.

South Korea

A government-backed consortium has established a Unix specification. "Ticom" addresses local language issues and serves as a standard for government procurements.

Written by David Kellar, Tokyo correspondent at the IDG News Service. *Computerworld Australia*, *Computerworld Hong Kong*, IDG Communications Taiwan and *Computerworld New Zealand* contributed to this report.



DAVID POWERS

♦ *Charles Schwab's Jim White: 'Vendors have to get away from trying to provide total solutions rather than a core product that would fit open environments'*

OPEN ENOUGH

CONTINUED FROM PAGE 92

"If what you know is the world of IBM, today's world has got to be frustrating from a lot of points of view," says Nicholas Rudd, chief information officer and senior vice president at Young & Rubicam, a New York advertising agency. "You've got lower cost, but you're not sure if it's going to work with everything else you've got."

Signs of progress

Some users even understand their vendors' fears of turning their products into generic commodities and no longer accuse vendors of dragging their feet when it comes to incorporating standards in their products.

"That was the case even with proprietary systems," acknowledges Lehman Brothers' Sherr. "When I was on an IBM or DEC platform, they told me how much I was going to get, when I was going to get it and how much it was going to cost."

But for all their newfound pragmatism about open systems, many users still have a bone to pick: They wish vendors would stop fighting over minor issues and instead focus on doing what they do best.

"Vendors who have good products in one space are trying to provide total solutions rather than a core product that would fit in an open environment. This is what we've got to get away from," White says.

Fortunately, there are signs that vendors are beginning to get that message. Recent announcements such as the Common Open Software Environment, proposed by IBM, Hewlett-Packard Co., Sun Microsystems, Inc. and Novell, and the "Posix t170" collection of application programming interfaces suggest that suppliers have begun to eliminate some of the low-level inconsistencies among otherwise similar products (see story page 119).

Still, users complain that their most pervasive problem with vendors remains the lack of standards-based products in certain key areas, including system and network management and security.

Trade-offs inevitable

Ironically, one key role of standards is reducing choice. But the hardest choice many IS executives face today isn't which vendors or products but how products will be used. Even standards-based products include extra bells, whistles and other features to make them more attractive and easier to use.

Should you take advantage of those features and risk becoming locked into a single vendor's product? Or should you forego them and risk losing the competitive edge they may give your competitors who use them?

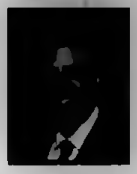
Your choice is getting the most either from the product or from the standards it's based on. That's a trade-off — a compromise. But today, the road to open systems is paved with compromises. ♦

Hayes is a Portland, Ore.-based free-lance writer who specializes in Unix and open systems. His Internet address is frankhayes@bix.com.

"HOW DO YOU DEFINE OPEN?"

"Ultimately, [open systems] simply and importantly boils down into having more choices."

EUGENE LUKAC, Vice President of Information Services, U.S. Bancorp, Portland, Ore.



"Open systems creates an opportunity to provide a more flexible technology solution to our clients."

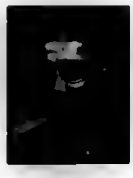
MIKE BELAC, Director of Data Management, FHH Fleet America, Hunt Valley, Md.

"Open systems means the ability to pick the best of breed in hardware and software, whether it be spreadsheets, programming tools, databases or any other element. . . . In the past, IS executives could pick the wrong tool or vendor, and the consequences might have been disastrous."

ED ALTMAN, Executive Director of MIS, Paramount Pictures Corp., Hollywood, Calif.

PERSPECTIVE

IT'S TIME TO GET TOGETHER



PETER KEEN

"True progress will be sped up when logicians and pragmatists join forces."

Unix is proprietary. SNA is open. Your response to that statement — "yeah" or "@!!!**" — says which of the two standards camps you belong in: logicians or pragmatists.

Logicians drive the formal standards-setting process. They tend to be optimists: academics and technical specialists.

Logicians are the true believers who forgot that Open Systems Interconnect was a "reference model," who saw ISDN as a long-term unifying blueprint for the world's public networks, who are the founders of forums such as the Committee for Open Systems and who are vendors with grand schemes, most obviously IBM with Systems Application Architecture.

Pragmatists don't have a scheme. They are opportunists who go with what works. In doing so, they often determine what works: PC users and software developers who turned proprietary DOS into a very open standard, telecommunications specialists who solved the Unix-to-SNA problem with TCP/IP and IS managers who decided that despite its usability, the nonstandard Macintosh did not fit into their architecture.

Pragmatists must be opportunists. To them, an open standard is meaningful only in terms of products. The latest X/Open Co. survey illustrates their main problem: Many of the open standards products they need — integrated network and systems management tools, client/server applications and distributed environment tools — are unlikely to arrive smoothly.

Perhaps disciplined pragmatism is the key to making smooth and consistent progress. Logicians get results slowly: X.25 took 15 years to implement in proven products. X.400 took eight years. ISDN was obsolescent before its rollout. In contrast, multimedia and wireless are here before there are standards. The same is true for Fiber Distributed Data Interface.

True progress will be sped up when logicians and pragmatists join forces. The former can help define standards and publish interfaces. Users can then push vendors to publish standards and make sure no one player controls changes. And perhaps most critically, users must create enough mass to guarantee rapid growth of products and services.

SNA fits this definition, which is why it is clearly an open standard. Multimedia and wireless will be nonopen for a long time unless users create a market leader. And judging by these criteria, Unix is a semiopen, semiproprietary standard — unstable and not fully defined.

The faster technology moves, the more pragmatists will determine open standards. To shift from being opportunistic and reactive, they need to tell logicians what they are betting on. Logicians and pragmatists can formalize the standard they each embody and ensure better end-to-end integration across the enterprise.

Keen is executive director of the International Center for Information Technologies.

TRAPPED IN THE BODY OF THIS TINY SER

This is a story about a small computer engineered to be so dependable, you won't think twice about trusting it with your mission-critical applications. And to be this without filling a closet, much less a room. If you haven't thought of Compaq as an enterprise-critical platform before, we invite you to grab your bifocals and begin. (We'll be cramming a lot of information into this ad, which, given how much we managed to fit into our new servers, only makes sense.)

If there's one thing we've learned working with our customers, it's that you're running more and more mission-critical applications on your network. And if your network goes down, your business goes down. All of which makes the introduction of the new Compaq ProLiant Server even more timely.

The ProLiant is a new family of affordable, high-performance, easy-to-manage servers engineered specifically to provide the high availability you need for mission-critical networks. We've designed ProLiant in three different models, ranging from a single-processor configuration to a four-Pentium processor model.

Now, how can you be sure our server is truly a miracle and not a mirage? To begin with, there's Full Spectrum Fault Management, provided by Compaq Insight Manager technology and software that continually monitors over 800 aspects of the server's operating status. (For example, Drive Parameter Tracking checks 15 hard-drive parameters.) All of this information is constantly gathered, analyzed and then used to prevent, tolerate or recover from system problems.

If the performance of a monitored component drops below a specified level, our unique Pre-Failure Warranty kicks in. We'll actually replace a Compaq warranted drive or memory system free. Before it stops working. No downtime. Ringing cash registers. Happy boss.*

Still, no network's perfect. In the unlikely event problems occur, our server exhibits remarkable tolerance. Every ProLiant includes Compaq-designed hot-pluggable drives. ProLiant Models 2000 and 4000 come standard with advanced error-correcting memory and off-line backup processor features (whereby the server reboots automatically to a second processor). And, most notably, the Compaq Smart SCSI Array Controller together with the ProLiant Storage System ensures mission-critical data integrity. Should a network problem bring the server down, the Rapid Recovery Systems of the ProLiant are designed to bring it back up.

VER IS A MAINFRAME WITH AN ATTITUDE.

For example, Automatic Server Recovery 2 uses a historical record of server status and performance to perform an astonishing array of tasks. Like intelligently restarting the server, automatically correcting a variety of problems, and accessing a telephone pager to contact network administrators.

By now you'd expect us to have rethought server setup, configuration and OS installation, but you might be surprised by the results. Introducing SmartStart, a CD-ROM system that takes the headache out of getting your server up and running. ProLiant includes a CD-ROM drive and bundled CDs of optimized Netware and other major operating systems. To get hooked up to your network operating system, simply call your dealer for an access code, enter it, answer a few questions, and leave. Minutes later—say, after you've enjoyed a cup of coffee and a jelly donut—you'll return to find an integrated OS fully installed and optimized for increased performance and improved management. And we'll keep you updated via CD when new operating system versions appear.

*And finally, to accompany our new line of mission-critical servers, we're introducing mission-critical support. With ProLiant, we now offer extensive analysis, installation and service through our CompaqCare System Partners, a select group of highly trained systems experts backed by Compaq engineers. You can now choose 4-hour on-site warranty response upgrade** direct from Compaq. Again, there's our unique Pre-Failure Warranty. And, of course, all Compaq servers come with a 3-year on-site† warranty, and 7-day-a-week, 24-hour-a-day technical support.*

All in a surprisingly small box for not a whole lot of money. In fact, a DX2/66 Compaq ProLiant 1000 starts at about $6000‡.

Which may help to explain the look your boss gives you when he hears how much money you've saved: stunned admiration. But you'll get used to that. It goes with the territory. For more information on the new Compaq ProLiant servers, or for the location of an authorized Compaq reseller near you, just call us at 1-800-345-1518. If you'd like to receive model, feature and specification information immediately via fax, select the PaqFax option. Or, if you'd like that information even sooner, just turn the page.

COMPAQ

The New Compaq ProLiant Mission-Critical Servers

	ProLiant 1000	ProLiant 2000	ProLiant 4000
High Performance Network Servers			
Processor	DX2/66 or Pentium 60MHz	DX2/66 or Pentium 66MHz	DX2/66 or Pentium 66MHz
Architecture	TriFlex/PC One Processor	TriFlex with up to two symmetric processors	TriFlex with up to four symmetric processors
Network Interface	Up to 12 High-Speed Channels; NetFlex 2 with Packet Blaster Technology Standard		
Standard Disk Controller	Integrated Fast SCSI-2 and Smart SCSI Array Controller (selected models)		
Storage Capacity	550MB–112GB Internal/external	1050MB–140GB Internal/external	1050MB–140GB Internal/external
Typical Usage	Departmental network services—primarily NetWare	Departmental network application services—NetWare, NT and Unix	Application services for preemptive downsizing—NT and Unix
Transaction Rating	50–150 TPS	200–300 TPS	300–400 TPS
Estimated Starting Street Price‡	$6,000	$8,900	$13,900
Server Dependability and Availability			
Management	Second-generation Compaq Insight Manager (standard) combines with innovative hardware design to constantly monitor, assess and report server health and performance		
Fault Prevention	Insight Manager alerts you to server status changes in over 800 component parameters, allowing proactive server management backed by 3-Year Pre-Failure Warranty		
Fault Tolerance	Standard support for RAID levels 1,4,5; hot-pluggable drives; on-line spare drive; off-line backup processor§; advanced ECC RAM§		
Fault Recovery	Standard rapid recovery services automatically return server to full operational status even in the event of a critical subsystem failure		
Simplicity, Ease of Ownership and Support			
SmartStart	Standard CD-based intelligent hardware configuration and system software installation, providing simplified server configuration for NetWare, NT or Unix. (CD-ROM drive standard)		
System Warranty	Free Three-Year, On-Site Limited Warranty		
Pre-Failure Warranty	Three-Year, On-Site Warranty replacement of designated components that fall below preestablished thresholds		
4-Hour Warranty Response Upgrade	Optional Three-Year On-Site Warranty upgrade to 4-hour response		
Technical Support	Toll-free, 7 x 24 technical phone support from Compaq engineers		
CompaqCare System Partners	Highly trained, dedicated, third-party professionals who provide systems maintenance and comprehensive technical support		
QuickFind/PaqFax	Proactive notification and delivery of new technical information/7 x 24 fax response for updated specification, configuration and settings data		

COMPAQ

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THE STATE OF OPEN SYSTEMS '93

NONSTANDARD STANDARDS

JAMIE HOGAN

DESPITE GRAND PLANS AND INTERNATIONAL GUIDELINES, STANDARDS ARE WHAT SELLS. STILL, IS HEDGES BETS FOR THE FUTURE.

DE FACTO IS DE STANDARD

BY AMY BERMAR

Dean Trilling once thought the Open Software Foundation would provide Cleveland-based American Greeting Corp. with its first open architecture. But after three years of planning long-term strategy to guide the $1.8 billion greeting card company through the next decade, dreams of open systems became a closed book.

DE FACTO, PAGE 100

THE BUYERS HAVE SPOKEN: MARKET LEADERS

1992 U.S. INSTALLED BASE IN MILLIONS

DOS	51M
Windows	12.8M
Unix	1M
NetWare	1.2M

SOURCE: BIS STRATEGIC DECISIONS, NORWELL, MASS.

ROBERT MCCLARREN/CORTESS

◆ *Microsoft's Bill Gates: Hoping for a winning plan with OLE 2.0 and Cairo*

Object wars

IT'S WINNER TAKE ALL STAKES FOR THREE COMPETING GROUPS IN THE OBJECT-ORIENTED BATTLE

By Garry Ray

Hashing out open systems standards may seem like genteel deliberation. But pull back the curtain and you'll find furious politicking rarely seen outside of Washington. Consider the ongoing jockeying for leadership in object-oriented technology.

The three-way battle pits Microsoft Corp., the Object Management Group (OMG) in Framingham, Mass., and an alliance that includes IBM, Apple Computer, Inc., Novell, Inc. and other vendors against one another.

The outcome probably won't be seen for some time, but the stakes are high. The winner will dictate object-oriented programming interfaces for years to come.

Each party is a formidable foe. Formed in 1989, the OMG, which boasts 100 software vendors, has cobbled together a series of specifications for object-oriented technology. The most important is the Common Object Request Broker Architecture (Corba).

Microsoft is pushing its Object Linking and Embedding 2.0 and Cairo extensions to Windows. The Apple/IBM alliance, which began with Taligent, Inc., is slated to deliver an object-oriented operating system in 1995.

Will the three pull together or pull apart?

Observers say Microsoft clearly intends to call its own shots. But lately, the Redmond, Wash., company has expressed more interest in the OMG amid Microsoft's rumored partnership with Digital Equipment Corp. and a third-party database vendor.

Microsoft expresses no regret about sidestepping the OMG in the past. "We have to move fast, and the OMG is taking much too long," says Dave Seres, OLE product manager. He adds that he views Corba as "technically useless."

Even so, Microsoft appears eager to gather object specifications from other alliances. For example, the company has been chasing Apple's OpenDoc specification since its announcement, according to Seres, but has thus far been ignored. Apple has made no comment on the issue.

The likely result of such wrangling? "Paralyzed interoperability" among open vendors, predicts Steve McClure, manager of object technology at International Data Corp. in Framingham, Mass.

Still, hope, like politicking, springs eternal. "It would be great," says Judy Mintz, the OMG's director of marketing programs, "if everybody was playing in the same sandbox."

Ray is *Computerworld*'s senior editor, Firing Line.

DE FACTO

CONTINUED FROM PAGE 99

"We have to run our business," says Trilling, vice president of information service responsible for a worldwide enterprise of IBM mainframes, minicomputers and workstations, Macintoshes and 3,000 PCs. "So whoever is perceived as having the best solution ends up as the de facto standard."

That's why Trilling and many colleagues are increasingly betting on market-made standards, whether it's Novell, Inc.'s NetWare, IBM's NetView, Windows and DOS, Intel Corp. processors or database management systems from Oracle Corp. and Sybase, Inc.

Analysts and information systems executives say demand for working products is usurping the relevance and role of "pure" open systems, even those based on official, international standards.

"It doesn't matter whether you call it open, proprietary, international or de facto," says Mark LaRow, a principal at Ernst & Young's Technology Service Group in Fairfax, Va. "There's no such thing as a real standard. What matters is market share."

With several hundred "standards" vying for primacy, users question which will endure. Some, including electronic data interchange (EDI), X.400, X.500 and TCP/IP, are generally considered survivors. Others, including Manufacturing Automation Protocol and Open Systems interconnect, have fared worse than expected.

And the kitchen sink nature of most standards groups means that standards, when available, often perform far worse than proprietary solutions.

WE SEE

consortiums because a consortium of vendors has a better chance of establishing a standard than any one vendor. This is actually a simplifying process, although everyone tends to groan that things have gotten more complicated, notes Charles Babcock, Computerworld *technology editor.*

Buying what works

"While users are entranced with the idea of standards, when all is said and done, they go back to what works," notes Howard Anderson, president of The Yankee Group, a Boston consulting firm.

"We know we're paying a premium by going with a proprietary approach," says Chip Cyr, vice president of information technology at Beckton, Dickenson & Co., a medical supplies manufacturer and a large IBM AS/400 site headquartered in Franklin Lakes, N.J. "But rather than waiting for nirvana, we're in the game now."

If there's a bright spot, Cyr and others note, it's that interim activity can hasten the standards-setting process. "Committees see what works in the real world. And even though you may be using a proprietary platform, the vendor is influenced by the principles of what you're trying to do."

True, says John Morris, director of liaisons at the Open Software Foundation in Cambridge, Mass. "The standards world is coming to grips with the market realities and marketing battles," he says. "There is an overall consensus that end users are able to describe what they need, and this gives vendors and standards organizations the ability to fill the gaps."

George Shaffner, chief operating officer at X/Open Co., a standards body comprising 130 vendors and users, agrees that unofficial and de jure standards can work in concert.

"De facto standards don't displace formal standards," Shaffner says. De facto standards have become more important, he says, as the industry moves to standardize new technologies such as client/server, object-oriented programming and DBMS applications.

Risks for users, vendors

What's the long-term impact of relying on unofficial standards? The biggest drawback for users: The de facto standard may be based on an inferior solution that can require rework to conform when a de jure standard comes along.

Moreover, vendors are hesitant to relinquish even small features believed to provide competitive differentiation.

Finally, many observers say proprietary products still deliver the biggest payoff. "Official standards, by definition, are trailing-edge technology," says Rikki Kirzner, an analyst at Dataquest, Inc., a San Jose, Calif.-based market researcher. "By the time something gets incorporated as a standard, the technology has moved on."

Procter & Gamble Co.'s senior standards-setting strategist could not disagree more. Four years ago, Frank Caccamo, vice president at the Cincinnati-based company's management systems division, bet that X.400 and X.500 would someday let him bridge the company's 15 mail packages. Procter & Gamble also relies on EDI and TCP/IP for internetwork communications.

"The standards we've tried to make within [Procter & Gamble] are those we'll try to hang on to," says Caccamo, who says he hopes to eventually reduce the mail load

BUYING: 1996

Purchasing plans for the next three years show a marked shift away from proprietary products

DATABASES
Sharp drop in hierarchical and SQL as object-oriented takes off.

FRAMEWORKS
X/Open's XPG4 and Posix new top runners. SAA dives.

GUIs
Windows edges out Motif.

OBJECT TECHNOLOGIES
C++ slips but still dominates. OLE and Corba are fast risers.

NETWORKING
Sharp drop in SNA, corresponding rise in OSI and DCE. Novell's NetWare will lose ground but stay in Top 4. Biggest winner: TCP/IP.

OPERATING SYSTEMS
Microsoft's Windows NT rises to top at the expense of Unix. All others lose ground, especially DOS and Windows.

SOURCE: X/OPEN CO. GLOBAL STUDY OF 780 IS MANAGERS

to four applications. "Heaven help us if the real thing comes along and it's different."

To increase its chances of being heard by the right people, Procter & Gamble employees sit on several standards-setting committees. The firm also continually assesses the viability of pending standards.

Buyers face another catch-22: In tight times vendors tend to invest precious development funds into proven products. "[No vendor] wants to spend the money or invest in the staff to research something new," says Robert Tucker, general manager of information resources and technology operations at KeyCorp., a financial services holding company in Albany, N.Y.

KeyCorp spent much of the past eight years acquiring other financial services organizations, and open systems would have helped in the resulting integration. But Tucker says he hasn't modified his stance on open systems.

"We're continuing to operate with the same vendors we've dealt with for years," he says, including Digital Equipment Corp., IBM and Tandem Computers, Inc. "Nobody's been able to demonstrate anything for open systems. They have good stories to tell, but they don't have enough installed base."

American Greeting changed LAN vendors this past year, based on the shifting market. "We didn't go to Novell right away because we were unsure of its prospects," explains Trilling, who previously used IBM's LAN Manager. Now, he says, NetWare has the benefits of clear market leadership, as well as new features.

De facto may be best

As user investment in de facto standards increases, the de jure standards are under pressure to match the evolving features of market-leading products. But this takes time.

As a result, notes Tom Kucharvy, president of Summit Strategies, Inc., a Boston consultancy, de facto standards may be the best available solution for users trying to balance the most competitive technology with some level of interoperability.

> **"WHILE** *users are entranced with the idea of standards, when all is said and done they go back to what works."*
>
> HOWARD ANDERSON, YANKEE GROUP

In many respects, de facto standards are better than open systems, Kucharvy argues. "They let you consolidate development and give you all the advantages of economy of scale without locking you into something that is inherently less than the most advanced technology available."

Anderson adds that users who grumble about the dearth of more interoperable solutions have only themselves to blame. "Users talk out of both sides of their mouth," Anderson says. "They say they want a standard, but they don't vote with their pocketbook." ◆

Bermar at Corporate Ink in Newton, Mass., writes about the computer industry.

CAN'T TELL THE GROUPS WITHOUT A SCORECARD

A fast, opinionated guide to stalwarts and fast risers in the standards world

◆UNIX INTERNATIONAL, PARSIPPANY, N.J.
Formed in 1988 to promote Unix System V as the industry standard, this once-promising group is a shadow of its former self. One industry consultant describes it as "a hollow organization with about 25 people, including support staff, and a huge production copier that can turn out thick books in a few seconds." On paper, the group has 300 members. A surprisingly active white paper and conference program supports its role as a Unix cheerleader. A merger with the OSF is a safe bet in the coming months.

◆OPEN SOFTWARE FOUNDATION, CAMBRIDGE, MASS.
Software think tank and development organization formed in 1988. Founders IBM, Digital and others wanted to promote industrywide standards for open systems. Today, the OSF boasts 167 corporate and 145 individual members. Only real successes: creation of the Motif graphical user interface and Distributed Computing Environment middleware. Influence appears to be waning rapidly with the rise of the COSE alliance. Active, fairly powerful End User Steering Committee.

◆X/OPEN CO., MENLO PARK, CALIF.
An international melange (headquarters are in the UK) trying to shake its clubby, vendor-dominated past. Arguably the most happening standards-making group in the open systems arena. Now consists of 16 vendors, 54 users, 27 independent software vendors. Its branding approach is gaining momentum and already encompasses a portfolio of more than 800 X/Open-branded products. Recently inherited ownership of OSF/Motif and the Unix brand name.

◆USENIX ASSOCIATION, BERKELEY, CALIF.
The pioneering (18 years old) group boasts 4,500 individual members and 450 on the corporate side. Heavy techie feel. Sponsors various seminars, workshops, symposia. Beards and ponytails still required, dude.

◆OPEN USERS RECOMMENDED SOLUTIONS, STAMFORD, CONN.
Headed up by superstar CIO Elaine Bond, this 2-year-old group and its 34 corporate members try to "improve multivendor computer networks."

Nonstandard procedures

WHY IS IT SO DARNED HARD TO MAKE GOOD STANDARDS QUICKLY?

By Ted Krum

A few years ago, open standards groups and professional bodies promised to lead eager users down smoother, wider and cheaper computing paths. Today, many information systems organizations are wondering if the guides are lost in the bramble.

X/Open Co.'s latest survey shows that the slow, fragmented and political process of creating open systems standards has left many IS chiefs disappointed, bitter and skeptical (see chart).

"As soon as customers show interest in something new, vendors jump on it and fight within the standards-setting bodies," laments Eric Firdman, director of strategic IS at Pacific Bell. "By the time standards are approved, they are already obsolete."

He is not alone: Many wonder whether existing mechanisms for devising open systems standards really work or if they matter.

Critics complain that poor user involvement and the sheer number of standards have hindered the spread of open systems, resulting in lost opportunities for users and vendors alike.

Electronic mail is a good example, says Dean Allen, vice president of information and administrative services at Lockheed Corp.

HOW SATISFIED ARE YOU WITH THE PROCESS FOR STANDARDIZING OPEN SYSTEMS?

SCALE: 1 – NOT SATISFIED
5 – VERY SATISFIED

SURVEY BASE: 700 IS EXECUTIVES

SOURCE: X/OPEN CO.

"The X.500 E-mail standard is still up in the air, so we had to develop our own interoperable E-mail capability," Allen says. "Open standards are important to us, but we can't afford to wait for them."

Little wonder, users say, that ad hoc industry groups, proprietary products and make-do solutions have rushed in to fill the vacuum, threatening to make "official" standards irrelevant.

"We don't care about open systems," says George Brenner, vice president of Universal Studios and director of corporate information services at MCA Worldwide. "Real standards would be nice, but the lack of standards hasn't really hurt us."

Brenner says he can accomplish all the interoperability his company needs by using hardware that runs on Token Ring or Novell, Inc.'s NetWare.

Such comments beg the question "What's wrong with the way standards get made?" Most agree on the following problems:

• **Too many groups.** The biggest obstacle is the decentralized nature of standards making. Hundreds of other large, lesser-known groups are now trying to establish open systems standards. This lack of centralized power, coupled with rapid technological innovation and lack of government regulation, makes discussions of reform difficult if not impossible.

• **Differing agendas and styles.** Priorities for standards makers and users often vary sharply. The former, for example, do not face the same time-to-market pressures as corporate

PROCEDURE, PAGE 108

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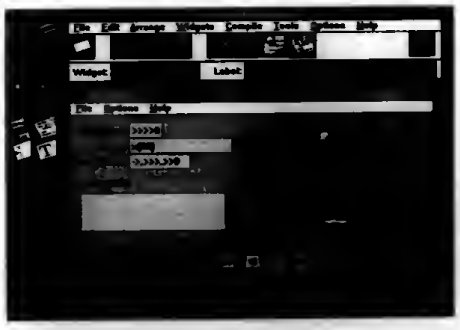

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HOT ALPHABET SOUP

A GUIDE TO THE MOST IMPORTANT AND FASTEST-RISING OPEN SYSTEMS STANDARDS

UNDOUBTEDLY, one of the worst things about open systems is that there are too many damned acronyms! Even the most fervent open zealots get goo-goo-eyed at the sheer number and complexity of standards, real and otherwise. To help you sort things out, here's an opinionated guide to the hottest, most important standards and suites.

COMPILED BY JONATHAN EUNICE AT ILLUMINATA, A HOLLIS, N.H., CONSULTING FIRM.

NAME	DESCRIPTION	KEY BACKERS	STATUS	STRENGTHS	WEAKNESSES
OPERATING SYSTEM AND SYSTEM SERVICES					
	Suite of standards describing Unix-like system behavior.	IEEE, all Unix vendors, some proprietary vendors.	Individual standards for core system calls, command interface and utilities ratified and available, many areas (security, GUI, testing, etc.) still under development.	Broad-based effort to specify and improve Unix.	Has taken a long time to deliver results; process continues.
	Common systems environment for selected IBM systems (MVS, VM, VSE, AS/400 and OS/2).	IBM.	Now almost a decade old. IBM products implement parts of SAA, though certainly not all. SAA plans appear less important than in years past.	Attempt to give a common application environment across important, diverse platforms.	Very slow state of development has significantly reduced user attention and confidence; other standards and approaches have superseded SAA's designs.
	Set of approximately 1,170 system and library calls defining Unix behavior.	Leading Unix vendors, X/Open.	Development recently initiated, being passed to X/Open.	Cooperative attempt to further nail down just what Unix is and should be.	Adds yet another standard, which overlaps with already developed standards such as Posix and XPGN.
	Description of APIs for writing Microsoft environment programs, especially those for Windows and Windows NT.	Microsoft, IBM (via OS/2), Sun (via Wabi).	Products implementing Win32, Win32s and other variants are now available (e.g., Windows NT, Windows 3.1), with more on the way.	Single-vendor definition allows quicker, surer definition with less compromise and confusion. Huge potential market makes Win32 and its variants very compelling target for software developers.	Single-vendor definition makes it closed and proprietary and also limits what could be valuable outside review.
	X/Open Portability Guide. Suite of standards describing Unix-like system behavior.	X/Open, most Unix vendors, some proprietary vendors.	XPG2 obsolete; XPG3 current and widely implemented on Unix, with parts on some proprietaries; XPG4 new and implemented by a few vendors (e.g., HP).	Comprehensiveness relative to other open systems standards. Attempts to define a whole application environment, not just a few system calls and utilities (contrary to Posix, Spec 1170). Conformance is tested and compliant products branded in conformance (i.e., vendor claims independently checked).	X/Open has been just one of many bodies attempting to standardize and has not had particular moral authority.
GRAPHICS AND USER INTERFACES					
	Common Open Software Environment, Common Desktop Environment for Unix and other open systems.	HP, IBM, Sun, SCO, Novell, X/Open.	Now under development. Functional specification released June 1993, with final definition by late 1993 and products in 1994.	Spurred by the threat of Microsoft's Windows NT, Unix vendors finally cooperate on interoperable desktop environment, ending years of bickering that did nothing to help users.	COSE attempts to unify, often without making hard choices between one approach or another. Merged products will do both ways, making them more complex and expensive to develop and use.
	Look and feel for X Window environments.	OSF, most Unix vendors.	Broadly implemented on Unix and some proprietary systems.	Portable, network-aware user interface system.	Defines only a part of the GUI behavior; needs more. Leaves many holes, which causes incompatible and dissimilar implementations.
	Distributed, windowed, GUI environment.	MIT, virtually all Unix vendors.	Broadly implemented and supported, especially X11R5 version.	Portable, network-aware user interface system. Has led to whole new classes of device, X terminals, with benefits of both workstations and terminals. May be good evolution for traditional terminal vendors.	Design does not optimize efficiency or functionality. Interoperability promises often at least partially subverted by subtle differences in configurations and font availability of different products.

NONSTANDARD STANDARDS

NAME	DESCRIPTION	KEY BACKERS	STATUS	STRENGTHS	WEAKNESSES
INTERCONNECTIONS (COMMUNICATIONS, NETWORKING, ETC.)					
	Asynchronous Transfer Mode. High-speed link interface suitable for creating network backbones (either private or public).	Telcos, networking vendors, systems vendors.	Products beginning to ship now (4Q '93).	Suits needs of backbones and multimedia applications; good fit with telco equipment will enable good service offerings.	None apparent.
	Fiber Channel Standard. Point-to-point high-speed links, primarily over fiber: Type 1 (raw channel) for cluster links, Type 2 (reliable, packetized) for disk links.	Systems and peripheral vendors.	Products beginning to ship now (4Q '93).	High-speed links suitable for shared disk, system clusters and high-availability links; high-end, longer-distance alternative to SCSI.	None apparent.
	Low-level definitions of the most important network media, including Ethernet, Token Ring and fiber.	IEEE, ANSI, virtually all network products vendors.	Definitions of Ethernet, Token Ring, FDDI and supporting layers ratified and widely available; definitions of incremental improvements and new network kinds (e.g., 802.6 MAN) in progress.	Networking critically depends on common, interoperable definitions of these networks.	None per se.
	Open Systems Interconnect ISO suite of communications and networking standards	ISO, at least lip-service paid by many systems and networking vendors	Implementations available for many open and proprietary platforms; not used as much as available.	Highly general, flexible, forward-looking definitions.	Extraordinarily complex; takes longer to implement and often more expensive to use. Despite more than a decade of development, not nearly as mature or proved as competitors TCP/IP and SNA; often treated as a check-off item, not a real must-implement requirement.
	Internet suite of networking protocols.	All Unix vendors, virtually all network products vendors.	Broadly implemented in both Unix and proprietary systems.	Mature and proved in innumerable implementations; practical inter-environment connections; steady, incremental evolution.	Relatively low function; impending shortage of IP addresses; confusing standards evolution process.
	Interface for connecting systems to public data networks.	CCITT, telcos, virtually all network products vendors.	Widely implemented in products and services worldwide.	Supports many WAN and inter-WAN connections.	Obsolescence approaching; designed for much slower connections. Designed for virtual circuit, long-haul connections in world that is increasingly packet-switched.
	Extended addressing and directory standards designed for worldwide electronic mail and messaging.	CCITT, many network services and software vendors (at least to some degree).	X.400 broadly but usually partially implemented; X.500 beginning to be implemented; no full implementations yet.	Flexible, future-looking.	Very complicated; slowing development limiting practical use.
DISTRIBUTED COMPUTING					
	Customer Information Control System. IBM environment for OLTP applications.	IBM, others indirectly.	Very widely implemented in the commercial computing world; now emerging in the Unix world.	Very efficient transaction processing possible; huge body of CICS applications.	Historical design.
	Common Object Request Broker Architecture. Common framework and definitions for accessing, interacting with and managing object databases.	Object Management Group (OMG), most vendors that follow OMG.	Corba 1.1 definitions available and products being built on this base; specs remain somewhat immature, and development continues with Corba 2.0.	Interoperability in the world of objects (which is already too complex to admit the complexity of N computing approaches).	Corba development behind products; continued development required to make Corba sufficient.
	Distributed Computing Environment. OSF's tool kit for developing distributed and client/server applications	OSF, most Unix vendors, many proprietary systems vendors.	First versions just now reaching users and developers; few applications use DCE yet.	High-function, distributed computing support components; broad acceptance promotes compatibility.	Long development cycle has caused many developers to look elsewhere for client/server support tools, performance and other productization issues weak.
	Network File System. Sun-developed file sharing mechanism.	Sun, virtually all Unix vendors, many proprietary systems vendors.	Widely implemented and used on Unix and proprietary systems.	Ultrabroad use makes it a very practical solution.	Performance, security and robustness over long-haul networks very weak; DCE DFS component, not NFS, seen as future of open file sharing.
SYSTEMS AND NETWORK MANAGEMENT					
	Distributed Management Environment. OSF environment for distributed systems and network management.	OSF, HP, IBM, CA, many others.	First components delivered to vendors late 1993 and to users in 1994 or early 1995. Full DME not to users until 1996 or 1997.	Attempts to address full difficulty of systems management problem; core services such as event notification, software distribution and license management inarguably required.	Full difficulty of systems management problem may be unsolvable in intermediate term; limited completeness and productization throws doubt on value of the enterprise.
	Simple Network Management Protocol. Internet protocol for managing network elements.	Virtually all networking vendors.	SNMP widely implemented and used. SNMP Version 2.0 now accepted and moving into implementation.	Lightweight design and broad implementation makes SNMP a very practical tool.	Lightweight design may not be fully scalable and limits functionality; security not good until SNMP Version 2.0 widely used.

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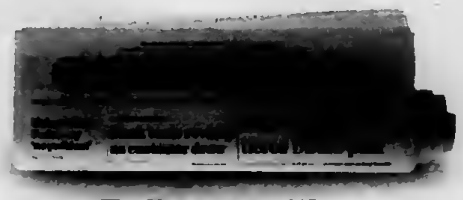


The Newspaper of IS

PROCEDURE

CONTINUED FROM PAGE 101

customers and are inherently bureaucratic.

"Success" for standards groups, says Mary Lynne Nielsen, senior project editor for Posix standards at IEEE in Dun Ellen, N.J., means achieving broad consensus, coordinating with other standards bodies and creating specifications that don't need much future revision.

"If the standards committees are guilty of anything," adds Lorraine Kevra, a co-chair of an ISO advisory group on open systems and manager at AT&T, "it's wanting the standards to be perfect before they let them go." Unfortunately, that's a serious impediment to customers in fast-moving industries.

• **Lack of resources.** Nielsen notes that IEEE standards makers are largely volunteer bodies. A 35-person staff coordinates the work of volunteer committees for the group's activities, including some 600 standards publications.

No miracles

Unfortunately, the reforms users say they want most — faster progress and more user input — are at odds. Even so, Jim Johnson, chairman of The Standish Group, a South Yarmouth, Mass., consultancy, says greater user involvement is a must. "Only users can separate the standards process from vendor politics," he says.

Because companies let vendors spend the time and money, Johnson continues, "the pace and results benefit vendors, not users."

There are precedents for users driving standards, including the pivotal roles played by General Motors Corp. and The Boeing Co. in helping standardize Ethernet and Token Ring.

Allen adds, "Only the biggest, most valuable customers can have real influence." Lockheed, Allen notes, is working through the Aerospace Industry Association's Technology Committee to gain additional leverage.

HOW COULD THE PROCESS BE IMPROVED?

THREE CHOICES PERMITTED

1. Faster adoption and implementation.
2. Fewer competing standards.
3. All vendors should be forced to conform to the same set of standards; fewer standards organizations.
4. Users should have more input into the standards process.
5. Standards should be implemented further into the development cycle.

More user involvement is fine with George Shaffner, chief operating officer at X/Open, an international standards certifying group. "Customers always tell me they vote when they buy products. But by then it's too late."

Even critics of today's standards processes recognize their looming future importance.

"We can't handle all of this activity with point solutions. Sooner or later, the industry will need to lay the pipe for truly seamless connectivity." ◆

Krum, based in Stamford, Conn., conducts independent research, consulting and free-lance writing.

ALAN LEVENSON

◆ *Lockheed's Dean Allen: 'Open standards are important to us, but we can't afford to wait for them'*

PERSPECTIVE

AN OPEN PROPOSAL

MICHAEL GOULDE

"A new charter would enable X/Open to be free to move into some of the more advanced areas of technology."

When it comes to defining and implementing a structure and methodology to achieve industrywide open systems, intelligent and rational professionals go on vacation and the Keystone Kops take over.

Users complain that there are too many competing standards coming from too many standards bodies.

No kidding.

The list of industry associations, consortia, accrediting agencies, task forces and ad hoc committees working on standards throughout the world is mind-boggling. There is no one organization with overarching authority to coordinate all of the standards efforts and ensure that they are not duplicative or incompatible.

This is a serious problem.

Some argue that X/Open plays the role of standards integrator and coordinator. However, the X/Open process is to integrate rather than prescribe. It combines existing standards into profiles and creates conformance tests to qualify products for the X/Open brand that users value.

The organization was not intended to look for new areas of standardization or to provide coordination of other standards efforts. It was designed to respond, not initiate.

Maybe the charter of X/Open needs to change. X/Open should become the overarching coordinating body that ensures that the efforts of the informal standards groups, such as the various consortia, workgroups and other industry forums, fit into a cohesive architectural and strategic plan.

X/Open could also coordinate the work of informal groups with the efforts of formal standards bodies such as the IEEE. There is no other organization as well-positioned as X/Open to assume this role.

And we certainly don't want a new consortium.

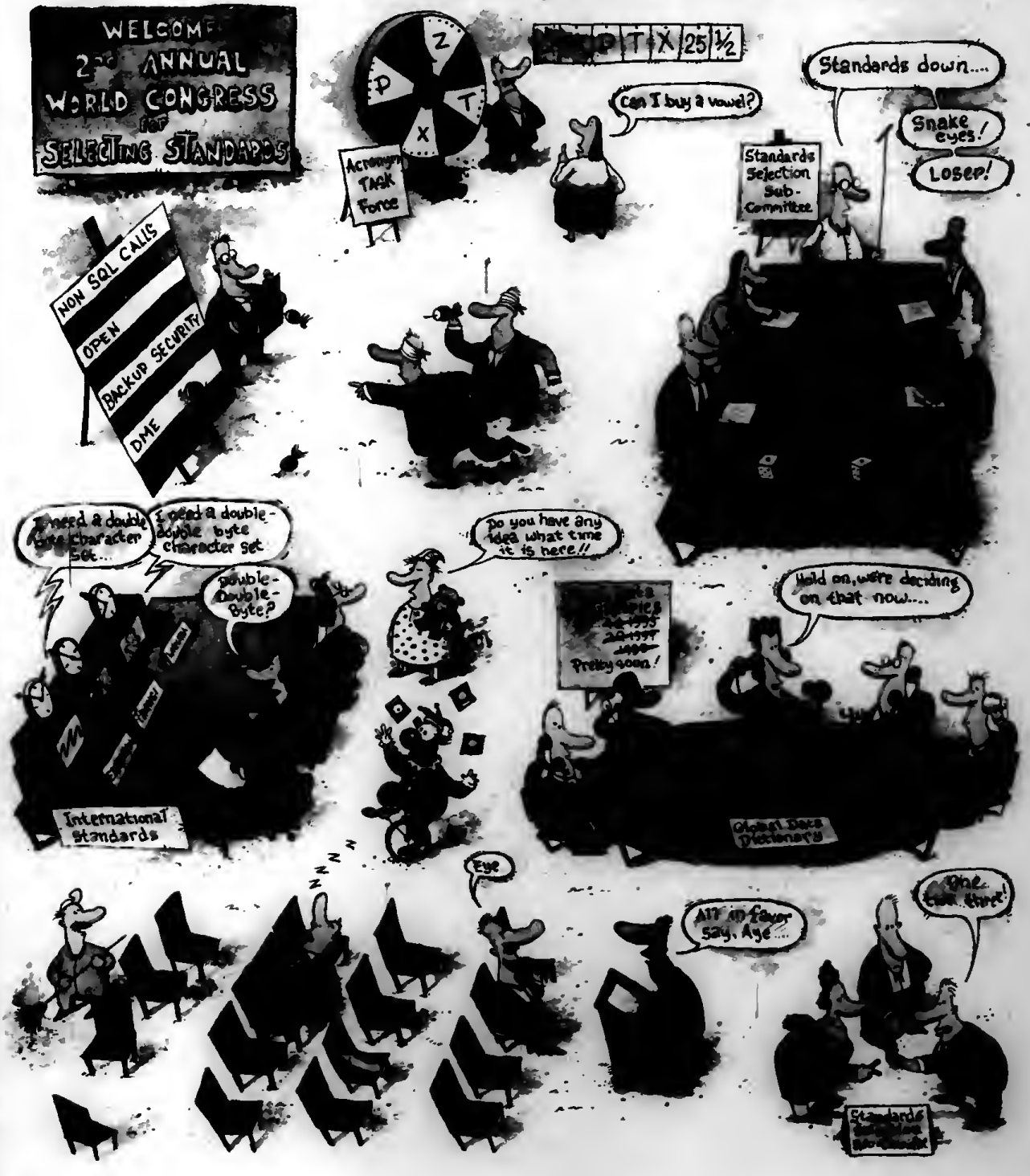
A coordinating body could squelch duplicative efforts and initiate work in areas where it was lacking. A new charter would enable X/Open to be free to move into some of the more advanced areas of technology, such as distributed object computing, and help set standards there so the industry can move ahead more quickly.

It is critical that X/Open remain permanently insulated from proprietary interests. User support is a critical component in ensuring neutrality. Funding is a critical issue. Branding fees are important, but there may also need to be an X/Open fee built-in and assessed as part of the purchase of branded products — a kind of open systems tax.

The X/Open User Council was given control of the X/Open requirements process in 1992. If users are going to have control and achieve the benefits of open systems, then maybe the users need to pay something to help reduce X/Open's dependency on vendor fees.

Goulde is editor in chief of "Open Information Systems," a newsletter published by the Patricia Seybold Group in Boston.

HOW STANDARDS (REALLY) GET MADE



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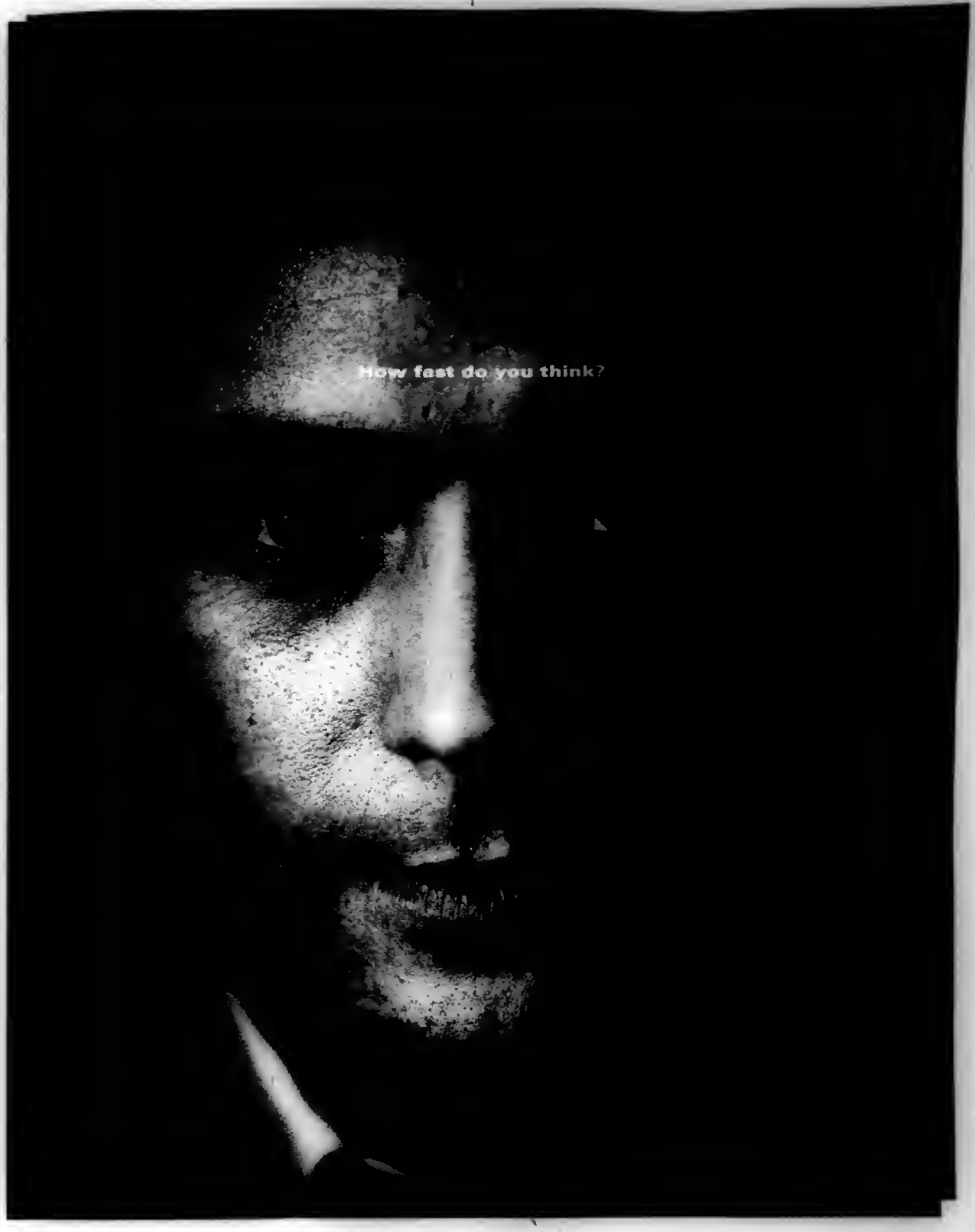
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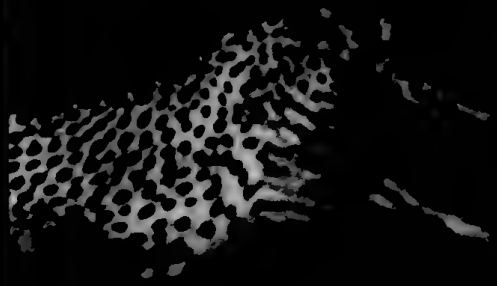
Some more information to bring you up to speed



NEC

THE STATE OF OPEN SYSTEMS '93

TALES FROM THE ROAD

NICK PRISHMAN

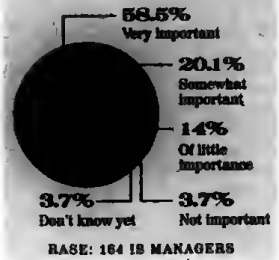
Associated Grocers took the open systems plunge last year with the help of a large executive team that included (left to right): David Okimura, Bob Nehira, Dragan Jagnjic, Boey Peng Mun and Dick Lester

WORKAROUND

WORTH SWEATING FOR

Openness equals headaches, but most users polled consider it important

PERCENT OF RESPONDENTS



BASE: 164 IS MANAGERS

SOURCE: COMPUTERWORLD

BY JEAN S. BOZMAN

Like pioneers who settled the open plains, open systems adventurers learn to work around hardship and eventually get where they are going. But not without detours, bumps, bruises and an occasional serious injury.

"I've stepped on so many land mines, I've got pegs for legs," quips David Pensak, a consultant who advises users on open systems and networks at Du Pont Co.'s research division in Wilmington, Del.

Among typical trials: Disk drives that crash in the wee hours of the morning, overnight database backups that stop halfway through, software vendors that disappear into thin air and development tools that won't fit together.

While users have been learning lessons for sidestepping such hazards since the 1980s, other complex problems persist, slowing the shift of mainframe applications to distributed servers and networks.

Information systems managers frequently complain, for example, that open systems consoles and management tools are far less evolved than those for proprietary mainframe environments. Security and integration are also big problems, along with support (see story page 117).

WORK, PAGE 114

Crossover schemes

TOP IS EXECS WHO HAVE TAKEN THE PLUNGE GIVE SOME FRONT-LINE ADVICE

TIP ONE

BEWARE THE MARKETING HYPE

Jumping to a new technology merely because of marketing hype or because it is the "in" thing won't necessarily boost your career or help your firm.

"We look at Unix as a technology, and it must prove its business value for our shareholders before we will embrace it," says Stuart Gulber, director of MIS at the Avery Division of Avery Dennison in Diamond Bar, Calif.

Indeed, IS executives should take a deep breath and calmly look at the real trade-offs in a Unix-based environment.

A problem for Unix is the need to support an on-line transaction processing (OLTP) environment. "Though progress has been made in OLTP support, the bulletproof transaction processing business demands is not yet all there," says Larry Panatera, director of information technology at Pepsi-Cola of North America in Purchase, N.Y.

TIP TWO

DO GOOD BEFORE YOU DO HARM

Because of the many installation problems, code rewrites and new system designs, any attempt to ramrod Unix into a commercial environment will alienate staffers and users. It also could cause hiccups that might lose precious corporate data.

Instead, a graduated approach can lead to less harm and greater good. "Start with pilot projects," urges Hugh Naughton, group manager of MIS at Gas Research Institute in Chicago, "and do a lot of prototyping."

TIP THREE

IF YOU'RE GOING TO BUILD A FIRE, FIRST BUILD FIRE-FIGHTING SKILLS

Programmers and analysts used to a standard mainframe environment are not likely to know what to do in a distributed Unix-based graphical user interface (GUI) setting. Apart from the confusion that shifting to a whole different operating system generates, IS executives can inadvertently make their in-house staffers feel like they are back in kindergarten.

John Nomura, director of global information technology at Mitsubishi Electronics of America in Cypress, Calif., offers this rule of thumb: "There must be at least 20% to 30% of Unix-experienced personnel in your project teams." Once trained, he adds, these staffers can take on a trainer role and further train or retrain others.

TIP FOUR

DON'T TURN USERS INTO UNIX GURUS

Unix can make life easier or much harder for your users. If you require users to learn arcane Unix commands, they are bound to become critics.

"Users should never need to know that they are running on Unix," says John Stevenson, vice president of MIS at Dr Pepper Co./The Seven-Up Co. in Dallas. "The emphasis of a Unix transition should be on simultaneously embracing GUI capabilities and making system access for users easier than ever."

Bottom line: Users need to get their jobs done and won't appreciate any requirements that force them to wear propeller-head hats.

Before putting Unix and Unix-based applications into the hands of users, conduct exhaustive testing, Panatera adds.

TIP FIVE

PUBLICIZE YOUR COMMITMENTS

If you've decided to use Unix, take a stand and make it work. Wishy-washy decisions will leave your staff confused.

Switching to Unix is "definitely not for the faint of heart," warns Denny Steele, vice president of IS at Bergen Brunswig Corp. in Orange, Calif.

Decisions to use one contemporary Unix version must be followed by a clear direction shared by all. It's a tough job, but that's the only scheme that will really work.

Written by Lance Eliot, president of Eliot & Associates and an internationally recognized computer industry consultant, writer, speaker and analyst.

WORK

CONTINUED FROM PAGE 113

Morever, users complain that still-evolving standards and products further complicate things. "It would be nice to have a crystal ball that you can rub and hope for divine guidance," Pensak says. "But if you wait until you're absolutely sure, your competition has probably beaten you."

Below, experienced hands that worked around the problems with early forays into open systems share their trials and triumphs in hopes of smoothing your path.

Dunkin Donuts

Dunkin Donuts, Inc., based in Randolph, Mass., migrated from Wang Laboratories, Inc. minicomputers to an open systems network of Sun Microsystems, Inc. servers in the late 1980s. But the donut chain soon ran into compatibility problems with TCP/IP in the corporate network.

The difficulty, explains Dave Bennett, vice president of information services, involved third-party TCP/IP support for Banyan Systems, Inc. Vines LAN servers and Sun TCP/IP support for its Unix servers. "Even though there were standards," Bennett recalls, the two products "didn't talk."

Sun engineers eventually solved the problem, he says, but finger-pointing and delays "blew us out of the water for two months or so" during development.

Another showstopper soon cropped up but was mercifully short-lived. In 1991, a corrupted Oracle Corp. Oracle 6 database brought operations to a halt for hours, according to Bennett. While Dunkin Donuts stores could still sell donuts, financial results could not be updated on the central-site system, he says, causing lost productivity.

"When something like that happens, it knocks you down, and people are sitting around not able to work. It's a huge opportunity cost," he says.

Despite these early bumps, the rest of the company's shift to open systems came as a result of standardizing on the Oracle database, which runs on both Wang and Sun platforms. Applications were rewritten for Sun machines and transferred off the Wang servers.

What lessons did Dunkin Donuts learn? The biggest one, according to Bennett, was also the toughest: Moving to open systems does not automatically slash costs.

"We are spending the same amount of money we would have if we'd perpetuated the legacy systems," Bennett says.

But, he adds, quicker, easier access to the centralized corporate database and a "much simplified" data environment have yielded big qualitative payoffs.

Bennett says he would like to be able to access other databases to widen his options. He claims that his only regret is standardizing on a single relational database management system.

While past problems seem small, he says, the sense of insecurity they cause can be profound. "You're never really sure if anybody is going to step up and solve the problem."

First Boston

First Boston Corp. views its move to distributed computing as a competitive advantage that gives its traders faster access to data feeds and powerful desktop analysis capabilities.

But migrating applications from IBM mainframes to 1,000 Sun workstations and servers also swelled the cost of each workstation seat from $4,000 to $15,000, says Jim Swanson, a vice president of IS at First Boston's Fixed Income Trading Technologies Group.

To make the move work, programmers had to build custom code in C and C++ to fill gaps in the open systems middleware. One custom-crafted, transaction-based utility, for example, lets mainframes pass data to Unix systems, ensuring safe arrival.

However, even with carefully planned coding and systems deployment, First Boston didn't bank on the day-to-day management headaches.

For example, handling backup of hundreds of gigabytes of data from more than 20 Sun servers poses a major administrative headache, Swanson notes. "We have so many workstations and there's so much installation and engineering going on that it's taking up a lot of manpower."

The firm is now considering a centralized backup with a large archival tape system.

Big gaps in systems management software — really a collec-

TWO YEARS *ago, according to Forrester Research, Inc., a consultancy in Cambridge, Mass., client/server systems cost 15% to 20% more to build than a traditional minicomputer-based solution. However, plummeting hardware prices and better development tools have brought the build-from-scratch price of both systems to about $2 million.*

tion of separate packages — is another problem. Swanson is eagerly awaiting the arrival in 1994 of several "framework" products that would unite network and systems management tasks.

Associated Grocers

Like First Boston, Associated Grocers, Inc. in Seattle did not wait for open systems to mature before taking the plunge last year. The $1.2 billion grocery cooperative installed a network of a dozen Unix servers to manage mission-critical warehouse inventory and distribution systems.

The goal was to base efforts on the Open Software Foundation's Distributed Computing Environment (DCE) standard, explains Richard Lester, vice president of IS. That meant a three-layered software approach in which user interface, database and application software are handled separately. DCE acts as the "glue" that links clients to servers.

The firm took a staff of Cobol programmers and retrained them to work in C, C++, Microsoft Corp.'s Visual Basic and Informix Software, Inc.'s Informix 4GL database application builder.

"I've leaned toward hiring a few key people with Unix and open systems backgrounds who are going to seed that knowledge into my organization," Lester says. "I'm still committed to retaining as many of the existing staff as possible and helping them to become technically proficient in this new world."

To reduce programming burdens, Associated Grocers bought Unix accounting packages as well.

An avid supporter of open systems, Lester says he still sees a few holes in his strategy: He, too, has not saved as much money as he would have liked — and the systems management tools are few and far between. For example, Associated Grocers had planned to cut its IS budget in half, down to just 0.5% of sales.

But the higher "soft" costs of architectures for client/server and open systems plus extra training, development and implementation costs have kept spending steady.

MIGNONA VATERSKA

◆ *First Boston's Jim Swanson eagerly awaits the 1994 arrival of 'framework' products to unite network and systems management tasks*

There were other disappointments: Lester says IBM RS/6000s running AIX installed in the early 1990s did not perform as well as Hewlett-Packard Co. HP 9000s in his environment. Since then, he has stopped buying the IBM workstations and begun buying HP servers.

"We were one of the very first users of RS/6000s," he explains. "When we put the order-entry system on it, we had to make an investment in duplicate hardware and backup systems."

A second setback arose from the need to carry out backup and restore operations on distributed Unix servers. Associated Grocers cleverly simplified the task by regrouping the warehouse servers in its central data center.

> "RIGHT NOW *the vendors have 25% of what you need and 75% promises.*"
>
> RICHARD LESTER, ASSOCIATED GROCERS

"Because of the immaturity of system tools, it's most convenient to run your core machine functions in a centralized place because of the operators there," Lester advises.

In the end, migrating to open systems has meant reassembling pieces of the fragmenting mainframe data center, but with a new set of building blocks.

"Right now, the vendors have 25% of what you need and 75% promises," Lester says. "Somebody has to go out there with 50% and we'll jump at it."

Myke Miller, a client/server manager at Andersen Consulting in Minneapolis, advises IS groups to sidestep conflicting standards by implementing their own application-specific interfaces. "You need to insulate yourself with a very thin layer of architecture," which can help prevent chaos, he says.

Gene Friedman, vice president of applied technology at The Chase Manhattan Bank NA, agrees that attention to architecture makes sense. Friedman advises picking a standard tool set and a vendor-independent framework. ◆

Bozman is a *Computerworld* senior West Coast editor.

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(508) 879-6700

◆ **CLIENT/SERVER CONFERENCE & EXPOSITION**
San Jose, Calif., Jan. 18-21
(516) 562-7460

◆ **COMNET '94**
Washington, Jan. 24-27
(508) 879-6700

◆ **SIM/COMPUTERWORLD EXECUTIVE TECHNOLOGY SUMMIT '94**
Tarpon Springs, Fla., Feb. 2-4
(312) 644-6642

◆ **BUILDING ENTERPRISE ARCHITECTURES**
Washington, Feb. 8-10
(310) 394-8305

◆ **UNIFORUM '94**
San Francisco, March 21-25
(800) 225-4698

◆ **NETWORKS EXPO**
San Francisco, April 19-21
(201) 346-1400

◆ **DISTRIBUTED COMPUTING WORLD**
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Toronto, Canada, Oct. 24-26
(508) 470-3880

◆ **UNIX EXPO 1994**
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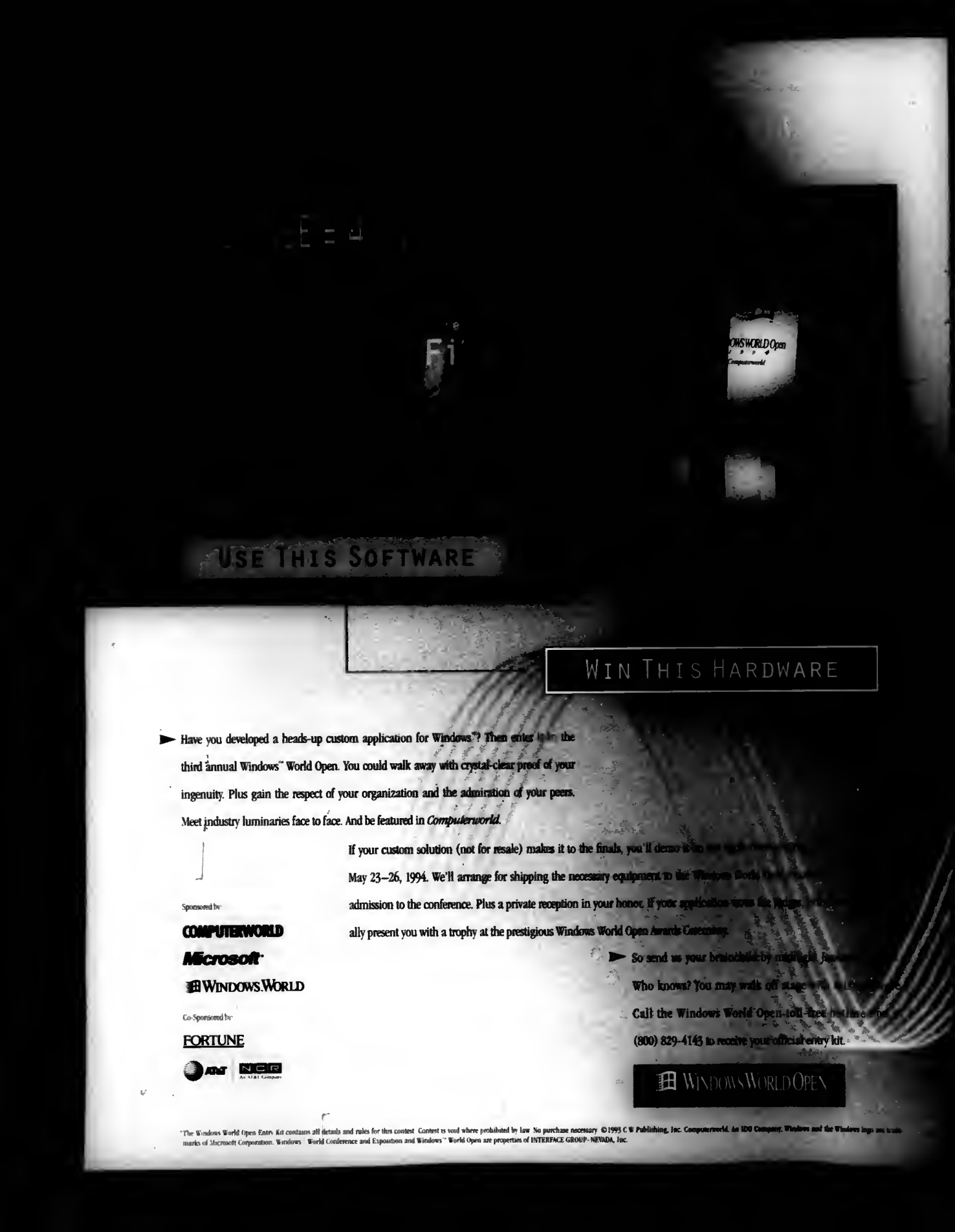
(201) 346-1400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   - ☐ OS/2 (c)
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   - ☐ Mac OS (e)
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   - 13. Dir./Mgr. Sys. Development, Sys. Architecture
   - 31. Programming Management, Software Developers
   - 41. Engineering, Scientific, R&D, Tech. Mgr.
   - 42. Sys. Integrator/VARs/Consulting Mgr.

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YOU MEAN WE GOTTA SUPPORT IT, TOO?

BY ALAN RADDING

Sky-high support demands nearly deflated Spalding Sports Worldwide's open systems game plan. When the Chicopee, Mass., manufacturer of sporting goods equipment began a migration from a proprietary Hewlett-Packard Co. 992/200 host to PC networks and HP Unix servers, it expected its data center staff to pick up support for the systems.

ALAN LEVENSON

♦ *Jenny Craig's Lee Rizio: Outsourcing support eases burdens but avoid long-term deals*

But the 60-person centralized group lacked the right skills and tools for the 9000 Series 800 and HP/UX environment, says Chief Information Officer Bard White. "We were naive at the beginning," White acknowledges. "We saw the cost savings of open systems, but we didn't understand networking and Unix."

Indeed, consultants say many firms focus so intensely on the design and development that support problems catch them off guard.

"Most companies assume that service and support will be absorbed within their existing setup — that the help desk will pick up the load and central IS will manage everything," says Robert Walsh, principal at Practice Corp., an open systems consulting firm in Mansfield, Mass. "But it doesn't work out that way."

For many, it's an expensive surprise. A recent study of support costs by Forrester Research, Inc. in Cambridge, Mass., found that the average cost for running a 5,000-user LAN internetwork was nearly three times higher than that of a comparable SNA network — $6.3 million.

"The sheer breadth of products borders on chaos," says Carter J. Lusher, program director at Gartner Group, Inc. in Stamford, Conn. The diversity of the open systems environment, he says, makes support more difficult.

Supporting multiple protocols without robust mainframe administration tools requires new skills and tools, adds Chip Steinmetz, chief technology officer at CS First Boston, Inc.

Others complain about staffing strains. "We have 650 stores, each fully automated, running critical applications but without anybody with computer experience," says Lee Rizio, vice president of information services at Jenny Craig, Inc., a Del Mar, Calif.-based chain of weight-loss clinics.

At Au Bon Pain, a Boston-based chain of 150 bakery/coffee bars, MIS director Mark Factor faces a similar dilemma. "Essentially, we support 150 data centers that don't have any skilled technicians. There is no central place to go for support."

Clever planning

The strain of retraining staff to maintain complex new open systems comes when the information systems group is under cost-cutting pressure. Still, such pressures have forced companies to develop innovative strategies.

Jenny Craig, for example, still maintains a centralized IS help desk. But many calls are forwarded to Computerland Corp., a Pleasanton, Calif., computer reseller chain.

But Rizio warns that outsourcing field support has limitations: For starters, the outsourcer doesn't know the company's business.

At Au Bon Pain, Factor combines outsourcing from NCR Corp. in Dayton, Ohio, with tools that allow his central IS support group to control the remote system and resolve the problem. The chain also standardizes on products with the biggest market share because more third-party support is available.

Spalding, too, outsourced its PC help desk because it lacked in-house expertise. But to ensure that the contractors understood Spalding's business, White insisted the vendor dedicate the equivalent of three full-time staffers to work inside his IS group.

"We will bring service and support back inside once we get our staff trained," he adds.

If there's an upside, it's that IS managers say now is a good time to ink open systems support deals with outside vendors. A broad range of outsourcing suppliers are slashing prices to capture market share.

In November, for example, Bell Atlantic Business Systems Services, GE Capital Computer Leasing and Sungard Recovery Services, Inc. announced they will bundle their respective service specialties: equipment service, leasing and disaster recovery.

Bottom line: IS managers say it's wise to avoid piecing together a last-minute open systems support strategy.

"View support as important as system engineering," Steinmetz advises, "and make sure that support is appropriately staffed before you deploy the new system."

Rizio's advice: Get multiple bids and avoid long-term contracts. ♦

Radding is a free-lance writer in Newton, Mass.

THE COST

of managing and maintaining a 140-user client/server system with custom software totals $859,000 over four years, says Forrester Research, Inc.

OPEN SUPPORT: GULP!

Architectural diversity can make open systems support a nightmare. Consider the mathematics of this worst-case scenario:

4 PLATFORMS X 3 GUIs X 4 DBMSs X 4 COMM PROVIDERS X 3 PRODUCTIVITY ENVIRONMENTS X 4 UNIX VERSIONS X 3 OLTP SYSTEMS =

6,912 COMBINATIONS

SOURCE: ANDERSEN CONSULTING, CHICAGO

PERSPECTIVE

Open and shut

The open vs. proprietary debate, as any information systems manager awake for the last decade knows, is hardly black and white. Free-lance writer Alice LaPlante asked top IS executives Rich Malone at Edward D. Jones & Co. and Jim Stikeleather at Kash n' Karry Food Stores, Inc. about the pros and cons of each approach.

RICH MALONE

Malone is general partner of data processing at Edward D. Jones & Co., a St. Louis investment firm with more than 2,400 U.S. offices.

JIM STIKELEATHER

Stikeleather is director of systems development at Kash n' Karry Food Stores, Inc., a $1.2 billion supermarket chain with 115 stores.

Both in business and technology, Edward D. Jones marches to the beat of a different, conservative drummer. When financial services companies dove into Unix, open systems and client/server computing in the late 1980s, Edward D. Jones held to its centralized strategy.

Malone says the $500 million firm, which specializes in serving individual investors, will eventually include distributed components in its IBM mainframe-based architecture — but only slowly and cautiously.

Edward D. Jones recently announced that it would replace six IBM Series/1 minicomputers handling front-end communications controllers with two IBM RS/6000 PowerServers. The company plans to have 10,000 North American offices by the year 2000.

Kash n' Karry Food Stores has grown at a 6.2% annual rate since 1988. In early 1991, the Tampa, Fla.-based chain decided to move to the forefront of retail grocering by implementing an open, distributed architecture.

Today, the company boasts both development and production networks containing a mixture of Sun Microsystems, Inc. SPARCstation and IBM RS/6000 servers alongside several Intel Corp.-based systems connected via Fiber Distributed Data Interface and a parallel 10Base-T network.

The chain is currently working to replace proprietary point-of-sale store systems with Unix processors and is using standards-based electronic data interchange.

Remarks from Malone and Stikeleather, combined from separate interviews, follow.

TWO VIEWS ON WHY OPEN IS THE SMARTEST CHOICE... OR NOT

Q What is the main drawback of staying with a proprietary architecture?

MALONE: Without an independent steering body, such as exists in the open systems world, your proprietary vendor can determine what, when and how changes to the system are to be implemented and rolled out. Pricing is determined by the vendor alone, not the market. If your vendor doesn't provide a solution, you might be forced to implement a costly, unintegrated or inefficient workaround.

And information about the underlying architecture and internal workings of a product is often a closely guarded secret, making customization and integration beyond that anticipated by the vendor impossible.

STIKELEATHER: I can't honestly say there was an objection to proprietary systems as much as there was an attraction to open systems.

We were concerned that proprietary vendors wouldn't be able to maintain the quantity, quality and availability of technical support and remain competitive with what was happening in the marketplace.

There were also the issues of depth, breadth and variety of hardware and software technologies available in both the commercial and public domain.

Finally, we wanted to control our own destiny. We used to joke about the annual visit of our [proprietary] vendor rep to tell us what our budget for the next year was going to be.

Q What do you believe are the major drawbacks to open systems?

MALONE: Open systems vendors often don't implement more than core functionality. If a database vendor tells you it can communicate with Sybase and Oracle, usually that means the bare minimum. You might not be able to get remote procedure calls or other critical functions. When you get down to what you want to do, you have a lot of customization ahead of you. And that usually requires a detailed knowledge of underlying standards.

We often have to go out and find people who know one particular thing in the open systems world — Distributed Computing Environment, for example — and there is no one place to go for information on how that works. You just don't call a single vendor.

In addition, the need to maintain open application programming interfaces can mean extra code is included in the software, as it tries to be all things to all people. Rather than just having to talk to a single platform architecture, you have to talk to the whole universe of possible architectures. That's a lot of extraneous code that takes up memory and disk space.

STIKELEATHER: Open systems is no bed of roses. If anything, it's more work than a proprietary approach. With open systems, you are your own systems integrator, or you spend money on consultants to perform systems integration for you.

Secondly, if you're doing it right, there are a lot of up-front costs and time spent building an open systems architecture infrastructure. With so many more options to choose from, most decisions require more evaluation and thought than you'd require with a proprietary approach.

Third, you can't rely on your vendors the way you used to with proprietary environments. You literally control your own destiny.

Finally, the transition is very difficult. You have to keep the legacy functioning while building your new architecture.

Frankly, you need a higher quality of staff. You can't just look in the manual or call a vendor for a solution. Open systems has a short-term negative impact on turnover, productivity and morale. A highly paid professional does not want to become a "trainee" again.

Q Do you find there are cost advantages to be found with open systems?

MALONE: You're basically just shifting your costs from one place to another. If you want to move to distributed, open computing, it should be because your long-term business vision requires it.

STIKELEATHER: With an open systems-based distributed network, we have a finer granularity of resource addition. We can add another machine, upgrade a machine or spread upgrades around the network.

This, coupled with the competition among vendors in the open systems world, gave us better incremental cost control than a proprietary approach could offer.

Q What would be the worst-case scenario for your firm, given the technology route you've taken?

MALONE: The worst-case scenario would be to invest a considerable amount of money and time in transitioning our proprietary environment to a distributed architecture, with no appreciable payback. There'd be a loss of credibility with our users.

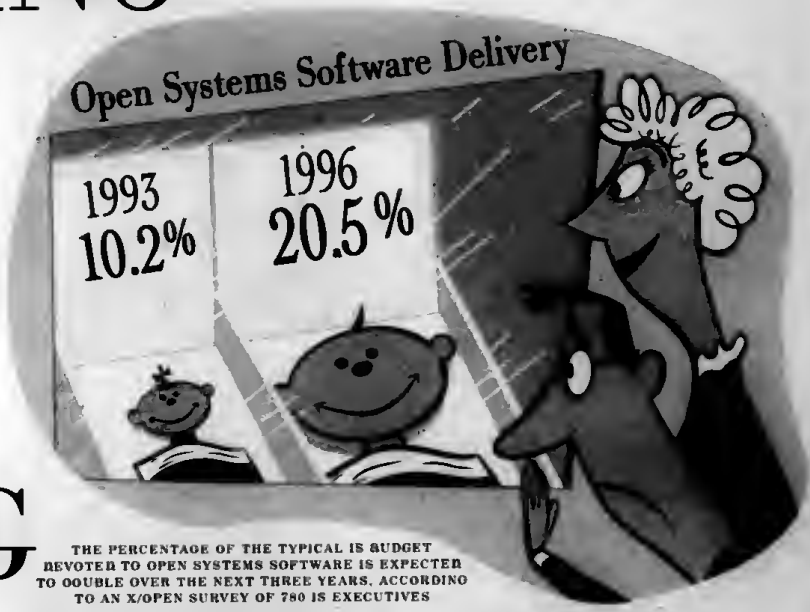
STIKELEATHER: The inability to attract and keep the staff we need. Open systems really pushes your staff. There's a shortage of qualified people. [But] the issue facing an IS executive is not whether but when to switch over. ◆

THE STATE OF OPEN SYSTEMS '93

HOW OPEN IS OPEN?

VENDORS SWEAR FIDELITY TO OPENNESS. USERS AND ANALYSTS SAY 'SHOW ME.'

IS BEING HALF OPEN LIKE BEING HALF PREGNANT?



DAVID SHELDON

THE PERCENTAGE OF THE TYPICAL IS BUDGET DEVOTED TO OPEN SYSTEMS SOFTWARE IS EXPECTED TO DOUBLE OVER THE NEXT THREE YEARS, ACCORDING TO AN X/OPEN SURVEY OF 780 IS EXECUTIVES

BY MICHAEL VIZARD

It's time, users say, for racy talk about open systems to end and labor pains to begin. Pressured by impatient customers and a swelling threat from Microsoft Corp., leading computer industry suppliers have set out to give birth to the Common Open Software Environment (COSE), their latest open systems wonder child.

But heard-it-all-before users and analysts are reserving their oohs and aahs until gestation progresses a bit. They say vendors must deliver more mature open systems products that offer true interoperability and portability.

"[One] of the biggest problems we have is running the same software on different platforms," says Glenn Smith, a vice president at J. P. Morgan Investment Services in New York. "It's doable, but it's difficult."

While major suppliers such as IBM, Digital Equipment Corp., Oracle Corp. and many others have for years sworn their support of "open" products and computing, many buyers remain skeptical of seller commitment.

The latest evidence: Respondents in X/Open Co.'s latest global survey cited "vendors provide proprietary/incompatible versions of open systems" as the single biggest barrier to open systems adoption.

Also cited as a major stumbling block was a widespread belief that vendors place their own interests above the interests of users in the standards-making process.

HALF, PAGE 122

UNIX UNITS

San Microsystems' SunSoft unit dominates the fragmented billion-dollar worldwide market for Unix operating systems

1992 MARKET SHARE BY SHIPMENTS

Solaris 1, 2	24%
SCO Unix (multiple versions)	18%
HP/UX	10%
AIX	7%
Ultrix	3%
Interactive	3%
NextStep	3%
Irix	3%
System V Release 4 (Intel)	2%
Others	27%

TOTAL SHIPMENTS: 1.01 MILLION

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

MAJOR UNIX VERSIONS COMPARED

WHO'S MOST OPEN?

NOT ALL 'OPEN' OPERATING SYSTEMS ARE CREATED EQUAL. AN EXCLUSIVE *COMPUTERWORLD* USER COMPARISON SHOWS BIG DIFFERENCES IN FEATURES AND SUPPORT.

SCALE: 1 = NOT OPEN AT ALL, 5 = VERY OPEN

DIGITAL'S OPENVMS

USER OPENNESS RATING

3.3

"OpenVMS is a proprietary operating system. You can't mount an NFS file on it, and that is just one of a million things that is proprietary about [OpenVMS]. OpenVMS is really not open, but using the name 'open' probably helps DEC sell another 5% of products."

MICHAEL HIGGINS

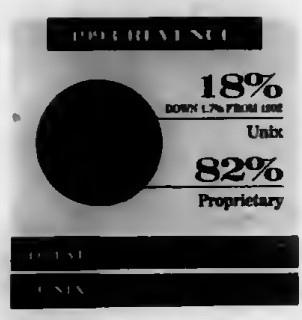
"DEC doesn't care what the end user thinks. They are more interested in selling hardware and not about what the end users need."

JOHN ALLEN

"We are very happy with OpenVMS. We like it better than Unix, but the world is going to Unix. For the average user working with OpenVMS, it is very hard to move from English commands to the cryptic commands found in Unix. In interoperability, Unix is better than OpenVMS. When we try to port over to VMS, we have to rewrite the application."

TOM GUNN

NOTES: *Digital's growing push into open systems also includes OSF/1, AXP 1.2 and Ultrix 4.3 as main thrusts.*



HP/UX

USER OPENNESS RATING

3.7

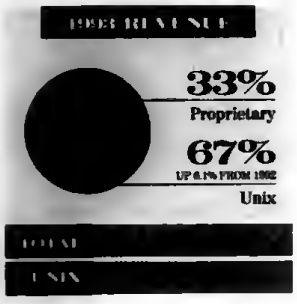
"HP/UX is not as mature as the MVS XA scheduling, tape management and debugging tools we use in our company."

RUSS QUARTARARO

"[HP/UX] has a lot of good utilities included in the operating system, such as scripts that make life easier for the user. More specifically, a script called SAM provides good basic administration capabilities. Another strength of HP/UX is that HP is providing the Posix shell in its operating system. . . . Most applications written for OpenLook don't quite work on Motif. . . . HP is more in compliance with the rest of the industry, in terms of standards, but I think Sun is realizing that and is trying to change."

SAM SOBHANI

NOTES: *Based on Unix System V Release 3 and Unix 4.3 technology. Strong in distributed management.*



IBM'S MVS/POSIX/AIX

USER OPENNESS RATING

2.4

"We have found that all of the [app] vendors have been willing to port to either SCO or AIX. . . . The toughest problem was getting the Token Ring connected from the mainframe to AIX and to get it to run at a respectable speed. We found answers very difficult to get out of IBM. . . . We hope we do not have to go to MVS for two major reasons: the cost and the other is that our staff is trained on VM and VSE."

DON DAVIS

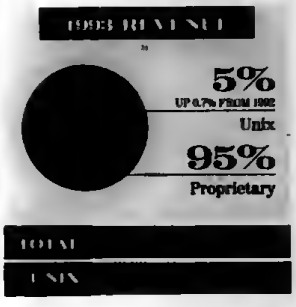
"IBM's AIX is a step behind in networking features. . . . We will welcome [MVS/Posix] tools since we are running Hitachi mainframes that are compatible with IBM. We have Posix-compliant tools on other systems."

JOHN ALLEN

"Every time we have upgrades, terminal interface problems occur [with AIX on an RS/6000]. We couldn't drive the printers at all [after installing the last upgrade] and ended up with the incorrect baud rate on our machines."

TOM GUNN

NOTES: *AIX is IBM's version of OSF/1. Predictably strong on RS/6000 workstations and servers.*



MICROSOFT'S NT

USER OPENNESS RATING

3.6

"I don't think we would move to Microsoft Windows NT to do our mission-critical applications. We may use NT as we use Windows on the desktop for office automation."

RUSS QUARTARARO

"In some sense, Windows NT is about as proprietary as you can get: There are no standards committees. From another standpoint, it is pretty open because of all of the applications and things that will run on it. Strictly speaking, Windows NT is not open, just as DOS is not open, but both have all of the efficiencies as if they were open."

DAVID CARLSON

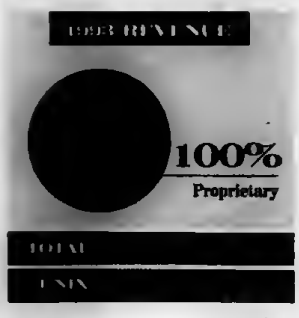
"I'm not anxious to move toward NT at all. As NT matures and as applications . . . become available, we will certainly be open to incorporating them into an open computing environment."

MIKE PRINCE

"Microsoft lacks a true spirit of openness. It is open wallet, not open systems."

JOHN ALLEN

NOTES: *Not truly open, but it may not matter.*



SOURCES FOR THE CHARTS ON THESE TWO PAGES ARE COMPUTER INTELLIGENCE/INFOCORP AND COMPANY REPORTS

ABOUT THE RATINGS

In a separate survey conducted by the *Computerworld* Database Division in late October, 164 information systems managers were asked to rate the relative openness of several major "open" operating systems they were familiar with.

Respondents were asked to judge on the basis of several criteria, including the following: compatibility with standard interfaces; application portability across different hardware platforms; support for open communications standards; interoperable support for heterogeneous environments, independent of a given vendor's strategy; more than one supplier of the primary technology; third-party support and applications readily available; publicly defined technology interfaces; and a published set of public or de facto standards, scalable across different-size hardware platforms.

Compiled by Lee Bruno, a free-lance writer in San Francisco.

COMMENTATORS

JOHN ALLEN is system integrator at Standard Insurance Co. in Portland, Ore.
DAVID CARLSON is senior vice president at Kmart Corp. in Troy, Mich.
DON DAVIS is director of MIS at Payless Drug Stores in Wilsonville, Ore.
MIKE PRINCE is director of information services at Burlington Coat Factory Warehouse Corp. in Burlington, N.J.
JACK HANCOCK is MIS vice president at Pacific Bell in San Francisco.
MICHAEL HIGGINS is technical support manager at Byer California in San Francisco.
TOM GUNN is systems administrator for the city of Oswego, N.Y.
RUSS QUARTARARO is manager of applications development at Union Camp Corp. in Wayne, N.J.
SAM SORMANI is technical specialist at Syntex Corp. in Palo Alto, Calif.
RICHARD HENRY is IS manager at Food for the Hungry, Inc. in Scottsdale, Ariz.
RICHARD PRUETT is network architect at Metro Seattle in Seattle.

NOVELL'S UNIXWARE

USER OPENNESS RATING

3.3

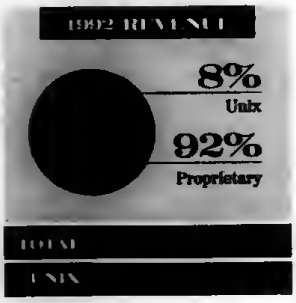
"Because UnixWare came from USL and Novell, it has the utilities to make a great centralized server. It is a vanilla type of Unix, and that is really what users are looking for. We need to work with the vanilla-type operating system to cut down on production and training costs."

JOHN ALLEN

"We wanted to access the Unix systems through Windows but didn't want to go to another protocol. UnixWare gave us this capability. The ability it gives us to look down the Unix pipe at NetWare file systems really helps us in relating our databases. We have, however, had a lot of problems trying to get some of UnixWare's basic functions to work. I still cannot print properly and LP doesn't do what it is supposed to do. And we can't get adequate support. We are hoping Novell acknowledges there is a problem with LP and fixes it in the next version."

RICHARD HENRY

NOTES: *Legal descendant of original AT&T Bell Laboratories' Unix. Marketed as Unix System V Release 4.2 by new Univel unit.*



OSF'S UNIX

USER OPENNESS RATING

4.3

"OSF was truly the beginning of openness. So much water has passed over the dam that its importance has passed."

JACK HANCOCK

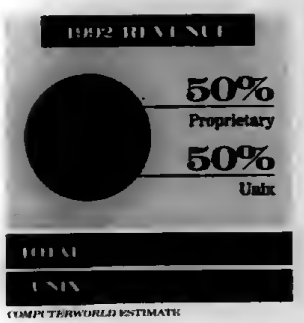
"The ideas behind OSF are good, clean and simple, and that is smart. The problem is that it doesn't exist anywhere. It has the right idea, but it isn't available."

JOHN ALLEN

"We ended up debating whether to purchase OSF/1 or OpenVMS. As it turned out, because of the applications we are planning to buy for a GIS, we will be getting one of each [operating system]. The GIS software ran on OSF/1 and the Oracle financials we are planning to buy run on OpenVMS. So we are buying two DEC Alpha boxes and two different operating systems."

RICHARD PRUETT

NOTES: *Released three years ago as OSF/1. OSF Release 1.2 began shipping in January. Next version will be microkernel-based.*



COMPUTERWORLD ESTIMATE

SCO'S UNIX

USER OPENNESS RATING

3.7

"There is only one SCO out there, and you have to do what they say. Because there is just one SCO, you can't jump ship if you need to. . . . We have found that the best open systems support comes from the people who also see the hardware."

JOHN ALLEN

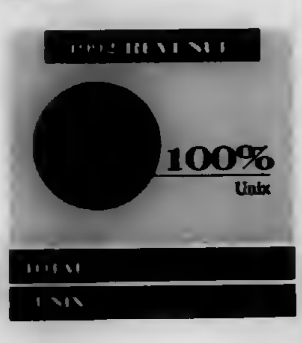
"Part of the reason Payless went with SCO is that SCO can run on any hardware box. It doesn't have to run on just one."

DON DAVIS

"In our experience, SCO Unix has been faultless and has done everything it was promised to do."

TOM GUNN

NOTES: *Leader in the Intel Corp.-based Unix market. Lite and Server versions of Open Desktop unveiled this year.*



SUN'S SOLARIS

USER OPENNESS RATING

3.7

"Sun had to go out and be different. They really, truly have their own operating system. And that does make it less open. It is the application vendors that get shut down by the incompatibilities among operating systems and then that shuts down the end user because the applications take longer to be ported."

JOHN ALLEN

"Sun is somewhat open, although the philosophy is to create [Solaris] as the target open system, which means that everyone writes to it."

JACK HANCOCK

"Sun is probably the premier company when it comes to compatibility with standard interfaces, applications portability, open communications standards. I'm not married to Sun's Solaris. I can switch vendors of operating systems or at least the versions of Unix without a major disruption."

MIKE PRINCE

NOTES: *Strong in SPARC environment, headed for Intel marketplace.*

HALF

CONTINUED FROM PAGE 119

"Open systems is somewhat of a marketing hoax," says David Soll, vice president of advanced technology at Omicron Co., a systems integrator based in Philadelphia. "Its one purpose is to make users independent from any one vendor, but it doesn't exactly work."

One big obstacle is that 25 Unix variants are now in use.

"On the surface, everything is open and salespeople have found open systems to be the word of the minute to use, but it's a catch-22," adds Daniel Grant, president of Tangent International Computer Consultants, Inc. "That's why there's this push now for the area of middleware. It's the glue that holds these semiopen architectures together."

Baby step forward

Industry observers say vendors must make COSE succeed to provide a much-needed toddling step ahead for open systems progress. Some analysts even predict that open systems growth between now and 1996 depends mainly on how large suppliers embrace this latest standards initiative.

"I think vendors are serious this time," says Jim Brennan, an industry analyst at WorkGroup Technologies, Inc. in Nashua, N.H. "They've made too much about these standards and would lose face with customers if they don't come through with them."

Backers, including IBM, Hewlett-Packard Co., SunSoft, Inc. and Novell, Inc.'s Unix Systems Group, say COSE will improve portability and interoperability.

COSE adoption, they say, will create a unified Unix platform by complying with a more narrowly defined set of industry standards than the 1,170 that have been floating around for the past five or 10 years. Backers hope to receive brand certification from X/Open.

Ultimately, the goal is to shield developers and users from many of the vagaries of Unix systems that have harmed past vendor claims of offering "open systems."

"The wars are over," declares Dave Taber, director of commercial product marketing at SunSoft, a unit of Sun Microsystems, Inc. "There's going to be a high level of commonality, which perhaps we're not getting enough credit for yet."

A big driver behind this unity is the specter of Microsoft. The Redmond, Wash., vendor is pushing to deliver a Win32 application programming interface, which will allow users to run the same applications across NT and a future 32-bit implementation of Windows.

"There are a lot of people who hate Microsoft," says Curt Monash, president of Monash Information Services, Inc. in New York, "so anything that is being seen as anti-Microsoft is going to draw a lot of support."

But even with an offering like NT, users are not assured of improved openness. For starters, NT doesn't claim to be wholly open and isn't. Plus, NT is prone to suffer from most of the implementation vagaries that affect Unix. Multiple vendors such as Digital, Acer America, Inc. and Sequent Computer Systems, Inc. are already implementing Windows NT on different hardware platforms.

For its part, COSE could eliminate some interoperability hurdles with other standards, such as the Open Software Foundation's (OSF) Distributed Computing Environment and Distributed Management Environment.

A delicate balance

But even that would not change a more fundamental problem: the need for vendors to strike a balance between maximizing profits and providing differentiated products vs. growing user demand for an environment that is plug-and-play compatible.

"The truly portable server operating system environment is a pipe dream," Monash says. The temptation for vendors is to sacrifice portability for features, he notes.

Bottom line: Vendors are making progress, but information systems managers shouldn't count on a truly open environment soon.

In fact, by the time vendors implement COSE, it's likely that new technologies such as object-oriented will create a whole slew of compatibility issues.

Even so, COSE backers remain optimistic. Their ideal scenario: In 12 to 18 months, the standard is adopted by makers of products based on Unix System V and the OSF/1 versions, then by Digital, HP and others.

Some, including Noah Ross, chief information officer at Cap Gemini America, Inc. in New York, wonder whether vendors will be truly able to lay politics aside.

"For a while, it looked like everyone was going to follow Novell's lead and set aside their differences," Ross says. "But they're still arguing because IBM wants to have a certain set of features and Sun wants another set for what they see as being important for their technological vision of Unix. It would be nice to have an implementation that covered all these services." ♦

Vizard is *Computerworld*'s senior editor, personal computing.

OPEN OPPORTUNISTS

The Unix systems market hosts a wide range of companies using Unix-based platforms

- **SECOND-TIER SYSTEMS COMPANIES** using Unix as a survival and growth strategy (Data General, Unisys, Groupe Bull and Wang).
- **WORKSTATION COMPANIES** attempting to leverage technical strengths in commercial markets (Sun and Silicon Graphics).
- **PC COMPANIES** using Unix to scale upward into multiuser/server positions (Compaq, AST and Dell).
- **FIRST-TIER MIDRANGE COMPANIES** expanding into new growth areas and attempting to capitalize on "open systems" buying (IBM and Hewlett-Packard).
- **THIRD-PARTY OPERATING SYSTEMS SUPPLIERS** trying to disintegrate the computer systems business and play leading roles in servers and the advanced desktop market (The Santa Cruz Operation, SunSoft, Univel and Next).

#?! SURPRISING NUMBERS

UNIX RELATIONAL DATABASE MARKET

♦ *Grew an unprecedented 51% from 1991 to 1992, reaching $1.13 billion. All regions enjoyed strong growth; Europe was especially strong. Sales of database development tools climbed twice as fast as database engine/server software.*

OBJECT-ORIENTED PROGRAMMING

♦ *Most likely candidates: Large sites with mainframes and Digital VAXs, heavy office automation or technical/scientific processors, open systems strategies and those in education, transportation, communications, utilities, insurance and financial services.*

UNIX INTEGRATED OFFICE SYSTEMS

♦ *Global sales rose 25% to $164 million last year, slower but still healthy. Reasons: Shifting demand for client/server and peer-to-peer products, emergence of Windows NT, more vendors. U.S. lags behind world badly: Sales here grew only 1%.*

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

PERSPECTIVE

CHART YOUR OWN COURSE

BILL LABERIS

"The worst thing would be for the [open systems] movement to be deeded to vendors."

For Columbus, it was a shortcut to India. For Lewis and Clark, it was the Northwest Passage. And for Monty Python, it was the Holy Grail.

The thread, of course, is people in search of some thing or place that doesn't exist but where the quest itself is what matters. Sort of like the quest for open systems: Reality and illusion in one epic package.

Go and ask any vendor if it is "open," or at least "totally committed" to open systems. The answer will be an unequivocal, unanimous "yes!"

The vendor is not lying.

Vendors really believe they are committed. It's just that the very definition of open systems is hazy at best.

That's what allows IBM to call the AS/400 a "relatively" open system or Microsoft to claim NT will be very open. True and untrue, reality and illusion.

In users' minds, open systems is a real place, a paradise where hybrid systems interoperate, scalability is a built-in feature, programmers write to common interfaces and major development languages are universally supported.

Sounds a lot like the reincarnation of the bygone IBM mainframe world or Digital in its All-In-1 heyday, doesn't it? The difference is that today, nobody has it all.

No wonder users have doubts about the open intentions of industry vendors. The leader, Microsoft, in some ways looks as much like the next great proprietary seller as anything else.

And that is why the true course to open systems must be set by users.

The worst thing would be for the movement to be deeded to vendors. The reason is simple: No computer company acting in its best interests is going to embrace a strategy that will produce less differentiation for its products.

So, to sit back and let companions with that kind of orientation steer the open systems movement is like leaving yourself at the mercy of the winds, the tides and a navigator who isn't sailing in the same direction you are.

Don't do it.

Laberis is *Computerworld*'s editor in chief. His MCI Mail address is 590-6827.

NOT Made in the U.S.A.

Despite cries of 'political incorrectness,' IS chiefs stand by their use of foreign programmers, citing quality and low costs

STELLA Rimington

BY GARY H. ANTHES

It is one of those things they don't teach in Software Development 101.

At a critical point in an application development project at Unum Life Insurance Co., a key foreign programmer — part of a team brought to the U.S. from India just for the job — went home for a lengthy religious observance. The project was several weeks late as a result.

"People really got bent out of shape," says John Alexander, who was Unum's chief information officer at the time. But the project was ultimately a success, and Alexander dismisses such cultural challenges as a manageable hazard of offshore software development.

Interest in the use of non-American programmers — whether brought to the U.S. temporarily or based abroad — is increasing among U.S. companies looking for ways to trim development costs and reduce programming backlogs. Companies claim cost savings of up to 50%, and they insist that code written by Indian, Irish or Filipino programmers is every bit as good as that turned out by their U.S. counterparts.

One major U.S. retail chain, for instance, faced with a requirement to get a major new system up in less than a year, gave the job to Information Management Resources, Inc. (IMR), which offers development services from centers in India. The $500,000 Cobol/CICS/DB2 warehouse application would have cost $1 million to develop in-house and $1.5 million if done by a software contractor using U.S. labor, says Jeff Forsythe,

Not made in the U.S., *page 124*

◀ **Former Unum CIO John Alexander:** *"The right thing [for one Unum development group] was to employ Americans and keep the work local."*

Not made in the U.S.

CONTINUED FROM PAGE 123

director of logistics systems at the retailer at the time and now a senior vice president at IMR.

"The U.S. — and, in fact, all of the more developed nations — are increasingly turning to offshore companies to get work done," says Janet J. Palmer, an associate professor at the City University of New York and a specialist in offshore outsourcing. "It's a strong trend — globalization of the information services industry."

Meta Group, Inc. in Westport, Conn., estimates that the market for overseas programming on behalf of U.S. companies is growing at 50% annually and should top $500 million this year.

Unum undertook two experiments in the use of non-American programmers, one executed at company headquarters in Portland, Maine, and the other by a team based in India. Both were contracted out to IMR in Clearwater, Fla.

The projects, which cost between $50,000 and $100,000, demonstrated that offshore outsourcing is workable and can be economically attractive, Alexander says.

A key part of the economic attraction is the cost of labor. Indian programmers are available at an hourly rate of $15 to $25 compared with $35 to $50 in Ireland and $50 to $75 in the U.S., according to International Data Corp. (IDC), which last year completed a study of offshore software development funded by the World Bank.

"You can get a Ph.D. in India for the same price as an undergraduate college student in the U.S.," says Kurt Johnson, a senior analyst at IDC in Framingham, Mass.

Unum's job in India was particularly cost-effective because developers were able, via a network, to use Unum's production mainframe in the U.S. during off-peak hours.

More legwork

However, Unum found that the advantages of offshore development were offset by disadvantages. "It requires more formality," Alexander says. "You have to do more work up front, and it requires more rigorous testing and evaluation at the end to ensure that what you said and what the other guy heard matched what you really meant."

That added layer of formality just about wiped out cost savings on Unum's test projects, but Alexander says offshore development in larger projects of the right type would probably yield between 15% and 30% in savings.

Unum concluded that the ideal development job to be sent offshore would cost more than $250,000 (large enough to recoup fixed costs involved in setting it up) and straightforward in scope — for example, porting a legacy mainframe application to a client/server environment without re-engineering the underlying business practices.

"It would also be helpful if the customer is really rigorous in defining requirements and is willing to hold the world still between requirements definition and solution delivery," Alexander says.

Forsythe agrees, saying that change control has to be rigorous when contracting from thousands of miles away. "You have to be disciplined in evaluating whether a system change is worth the risk of introducing late in the game."

Control was the watchword at Turner Broadcasting System, Inc. in Atlanta when it turned to offshore software house Data Conversion, Inc. in Cambridge, Mass., to develop a financial system. Turner designed the application and handed very detailed specifications — including test data — to the foreign programmers. To help Turner monitor the project, the programmers did all coding and testing on Turner's computer in Atlanta via satellite hookup.

Turner received 35 bids to develop the financial system, four from overseas firms. According to Don O'Brien, manager of application development, the U.S. bids ranged from two to five times the quote received from winning bidder Data Conversions. Offshore workers put in 17,500 hours of programming in six months, and the quality of code in the 240 programs delivered was "excellent," O'Brien says.

He says Turner's own development people objected at first to sending the work overseas but came around to the idea when they saw that the quality was good and that they would not lose their jobs. In fact, O'Brien says, there was a silver lining for Turner's 35 programmers: They were able to move from low-level coding and maintenance tasks to analytical work.

Palmer, who recently visited Ireland and the Philippines, says there is a strong quality ethic at work in most overseas programming shops. "Every place I went really stressed quality, not low

Not made in the U.S., *page 128*

The user interaction factor

While the use of offshore outsourcing seems to be on the rise, some forces are working against the practice, a number of observers say.

"As companies move toward client/server, the proximity between [IS staffers and end users] is going to be increasingly important," says John Alexander, president of Business Technology Consulting, Inc. and former CIO at Unum Life Insurance, which used offshore programmers on two projects.

"You can generate a [graphical user interface] screen overnight, and you really want the client to touch it and feel it and give you instant feedback."

The close ties between users and developers in some cases means that users become a part of the IS workgroup, he adds. "Doing that from overseas raises a whole set of issues that don't seem to be offset simply by the labor cost differentials."

Martin Garvey, senior research analyst at Meta Group in Westport, Conn., agrees. "For certain applications, offshore is OK," he says. "But there are more and more applications where you need interaction with users day by day, and that's very difficult to do when your programming takes place thousands of miles away."

From the users' mouths

Computerworld phoned 12 companies that are currently using offshore programmers to find out what their experience has been like. Here is what they told us:

42% said using foreign workers was a cost-based decision.

67% said they've experienced no problems communicating because of a language barrier or distance.

50% said they use offshore programmers for either pure coding or application development, but a majority said they use these coders to handle less than 10% of their development work.

75% said they would rate the overall quality of work done by offshore programmers as "excellent" or "good."

Source: First Market Research Corp., Austin, Texas

A CALL FOR ENTRIES

Give Your New Product the Launch It Deserves

By Entering the ComNet '94 New Product Achievement Award Competition

COMNET

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All contracted exhibitors introducing a new product, product enhancement and/or product upgrade for the first time at ComNet '94 are eligible.

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CONTINUED FROM PAGE 124

price," she says. "These companies take great pains to train their people to understand the applications."

Palmer's views were substantiated by *Computerworld* phone interviews with about a dozen U.S. companies using offshore workers. Three-fourths of those information systems shops rated the quality of foreign workers as "excellent" or "good." (For other results of those phone interviews, see page 124.)

And foreign programmers are continually trying to improve. Bolstered by government programs and incentives, Indian developers, for instance, are moving into areas such as relational databases, database integration, C++ programming, Unix and client/server technology, according to IDC.

Julian Coolidge, vice president of IS operations at The Travelers Corp., says he feels "very strongly" that the quality nf offshore work is just as good as in the U.S. and "in many cases better." Travelers in Hartford, Conn., set np a software development office in Ireland in 1987 and now has 27 application developers there. Coolidge says the company saves 12% on its offshore development work.

Nevertheless, there are drawbacks, he says. Echoing a complaint common to a number of companies that have gone offshore, he says, "There is difficulty in getting your traditional IS manager to use remote activities. It's a culture shock knowing your people aren't sitting down the aisle where you can go talk to them."

That remoteness is both a blessing and a curse, says former Unum CIO Alexander. At Unum, "we tended to put the programmers and analysts as close as we could to the businesspeople, so we tended to minimize the formal handoffs to maximize fast response to customer needs."

While the formal handoffs from Unum to its Indian team forced a discipline that was useful at times, it also led to misunderstandings, Alexander says.

"The strengths that Unum gains by having that close proximity [between IS staff and users] is that everyone tends to develop a shorthand way of working. Things are understood hut not said. If you try to translate that through 20,000 miles of communications network, it loses something." u

Legally speaking

Two changes in federal law may make things tougher for foreign programmers trying to work for U.S. companies:

1. Possible revamp of the Labor Conditions Applications.

The Labor Department is taking a close look at the Labor Condition Applications that employers must file when they petition for visas for foreign professionals.

Some of the proposed changes to regulations include the following:

- The government could initiate investigations. Previously, only "aggrieved parties or organizations" could file complaints. In this way, government agencies would be able to initiate investigations even in the absence of a complaint.
- Employers would be required to state how they determined the prevailing wage rate for the foreign worker.

2. Tighter restrictions on foreign visas for temporary workers.

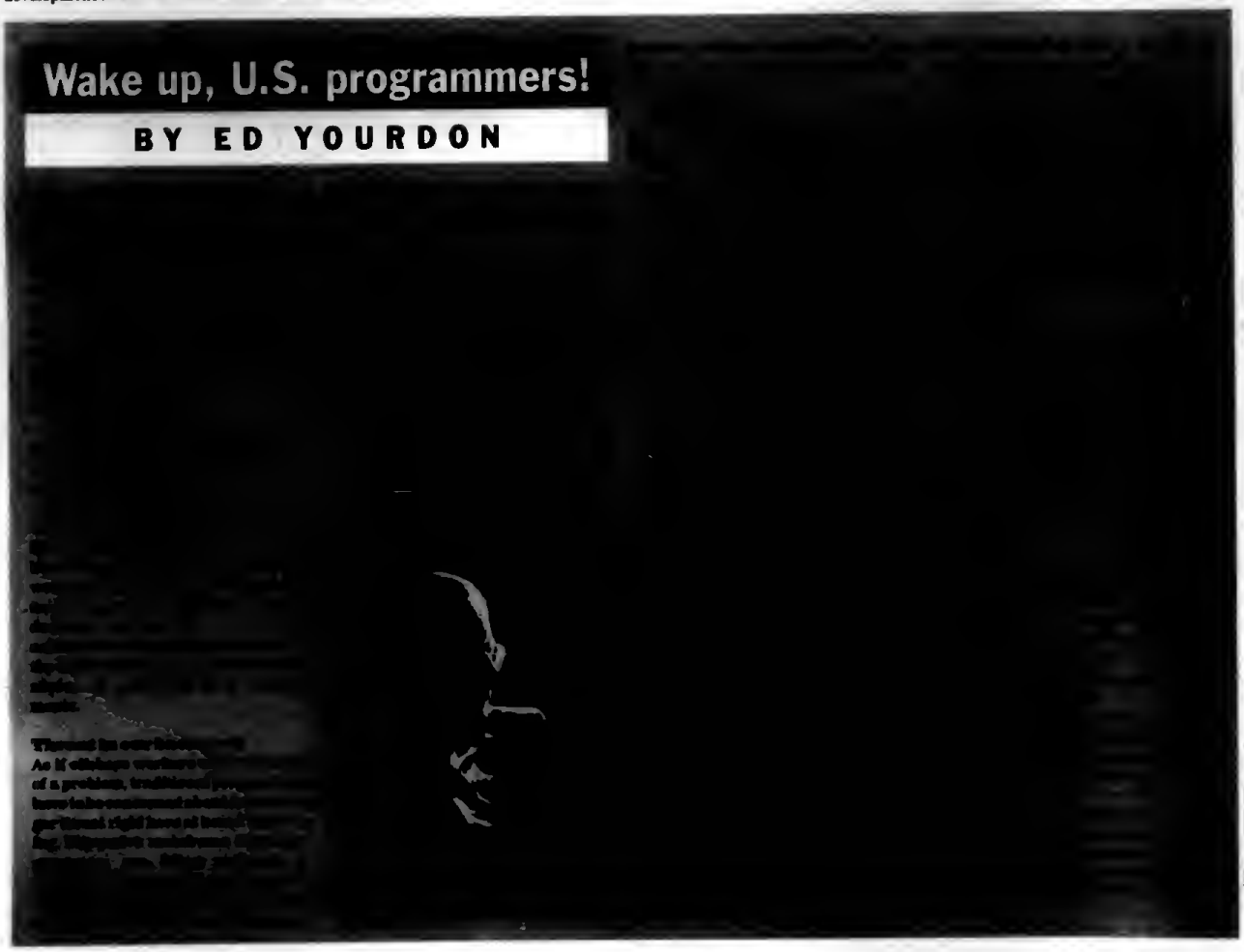
The State Department is looking at tightening visa restrictions in the area called "B-1 visitor for business."

Some of the proposed rule changes include the following:

- The foreign worker's salary or other remuneration can come only from the foreign employer, not directly or indirectly from a U.S. company.
- The foreign firm maintains ultimate control over the alien's employment, including hours worked.
- The alien's "proprietary work product" belongs either to the alien or the foreign firm, not to a U.S. firm.
- The foreign firm handles all personnel matters, such as promotions and terminations.

Wake up, U.S. programmers!

BY ED YOURDON



WHEN YOU INHERIT A WAN

By Julie Hart

When you thought your job couldn't get any harder, you suddenly inherit a wide-area network. Your first inclination is to run. Your second is to sign up for primal scream therapy. After the panic subsides, you realize what you already knew: You can't escape.

"Being a LAN technician is becoming somewhat like being an electrician because the technology is pretty close to plug-and-play," says Chris Finn, a senior analyst at TeleChoice in Verona, N.J. When you work with a WAN, however, no two networks are the same. "This is where you get into using art and science to pull everything together."

But where do you begin? First, if you don't know much about WANs, expect to feel a bit uncomfortable for about the first six months, according to analysts. And after that, it still isn't easy.

"You may inherit a WAN as well as a bunch of unmet needs," Finn says. That's why it's important to get to know your user community before launching into day-to-day WAN management.

"Find out how well the wide-area network is serving their needs," advises Bob Harrold, manager of strategic programs at ARI Network Services in Milwaukee. "And if you inherited a staff, talk to them about the network's current and potential use." This background information will come in handy.

"The biggest ongoing learning curve is sorting through the onslaught of technology," says Phil Evans, director of telecommunications at Perot Systems Corp. in Dallas.

Get your feet wet

Adding to the confusion is a growing mass of telecommunications options, from asynchronous transfer mode to synchronous optical network. In addition, data carrier solutions constantly change. Your best defense, Evans says, is to keep up with the players, especially their vision for the future.

Cpac, Inc. in Leicester, N.Y., is in the process of moving from individual PC and Macintosh LANs to a WAN. "Before, I just plugged in AppleTalk and it worked," says James Mullin, data processing coordinator. "Packets and TCP/IP and other terminology didn't matter to me. Most everything I needed was shrink-wrapped and ready to go. Now I find myself reading everything I can get my hands on."

One of the best ways for newcomers to get their feet wet fast is to surround themselves with peers. "Become active in an association," Evans says. Not only will you meet peers in other companies willing to share information, but the exposure to WAN issues and terminology will also eventually start to make sense.

A big concern is how to deal with multiple vendors. "With a WAN, you're not at all guaranteed that everything will run smoothly," Evans says. And when things go wrong, it's difficult to trace problems back to a particular vendor.

To minimize this difficulty, analysts suggest building strong vendor relationships before making long-term commitments.

"Vendors are willing to give advice," says Rob Rich, an analyst at Dataquest Worldwide Services Group in Framingham, Mass. "Just be sure to talk with them thoughtfully before coming to any conclusions."

In addition, be prepared for things to move more slowly in the large-scale WAN world than in the LAN environment. Although the technology is advancing rapidly, Finn says, companies are swallowing it at a leisurely pace to control costs.

If you plan to succeed in your new role, don't expect to simply keep the network running. "Give it a fresh look — that's what you're there for," Rich says. "Whoever set up the WAN in the first place may not have done it right, or the company's business goals may have changed."

Once you have some knowledge under your belt, take a close look at the WAN topology to determine whether changes are needed. A variety of ways exist to optimize a WAN.

Either way, your job is to ensure that the WAN you've inherited serves the needs of the user community. "It's not an easy job," Finn says, "but it's where the action is."

Hart is a free-lance writer in San Jose, Calif.

10 STEPS FOR FIRST-TIME WAN ADMINISTRATORS

1. Identify company's business goals.
2. Get to know user community's needs.
3. Create a WAN diagram, including production views.
4. Hit trade shows to preview technology.
5. Meet with service providers to compare costs and services.
6. Meet with vendors to discuss technology.
7. List how the current WAN environment meets user's needs.
8. Recommend/make adjustments to current WAN as needed.
9. Look for opportunities to consolidate systems.
10. Repeat process.

RESOURCES

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- Communications Managers Association
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- International Communications Association
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All skills reap benefits

By Joe Panepinto

Even though Emit Hurdelbrink and John Johnston have made the journey from mainframe systems operator to today's multiplatform world, they have marched to the tunes of wildly different drummers.

The 42-year-old Hurdlebrink started out in 1970 as a mainframe operator working in an Army mobile data center — two IBM System/360s in a 40-foot trailer in Frankfurt. From there, he took a job as a mainframe operator at Denver's city auditor's office and pursued his interest in programming by taking Cobol and assembler classes at night.

Emit Hurdelbrink

Data systems administrator

Denver's City Auditor's Office

Biggest challenge:

Moving from the mainframe to PC LANs. "What I have going for me as a mainframer moving into the PC world is a history of looking after data integrity and backup."

In 1976, he left to become a mainframe programmer at another company, where he wrote financial, accounting and other mainframe software for an IBM CICS system. Even though he was a self-proclaimed VSE hugot, Hurdelbrink picked up MVS skills from IBM manuals and wrote software primarily for that operating system.

He also did contract work but eventually returned to Denver's auditor's office as a mainframe application programmer, vowing to earn a college degree. Taking classes part-time earned Hurdelbrink a joint degree in business administration and information systems in 1990.

On the mainframe side, he picked up skills with VM and SQL. On the PC end, the city auditor's office had a mandate to install PCs and chose to go with 20 diskless workstations attached to a server via a 3Com Corp. Ethernet LAN. Vendor classes on systems administration were conducted at night, and soon Hurdelbrink and his colleagues were left to manage the network on their own.

"There was a lot of going in and playing with the problems as they came up," he said. "The processing concepts are really not that different from mainframes. It's just the administration was different."

They have since moved to Novell, Inc.'s NetWare.

Hurdelbrink says he believes IS people trained in a mainframe environment bring valuable skills to the PC world. "I'm used to being flexible. If I have a mainframe problem, a two-hour response time is terrible. We tend to put more emphasis on being up 100% of the time and so look at redundancy and backups, which were crucial to mainframe shops."

Downtime learning

Like Hurdelbrink, Johnston didn't have a college degree when he started his career in IS. In 1977, one year after graduating from high school, Johnston joined The Prudential Insurance Co. of America in Houston as a stock clerk and rapidly moved up to a position as third-shift operator at the firm's IBM mainframe shop. Johnston took advantage of downtime on the third shift and learned some Fortran programming.

When Prudential consolidated its mainframes, Johnston joined Baker Oil in Houston, where he became the only systems programmer on an IBM 4331. Johnston also began to interview regularly with companies, whether he was looking for a job or not. "Since then, I have always done one or two interviews per year, just to keep abreast of the skills people are looking for and to make new contacts," he said.

John Johnston

Manager, technical support

A large hospital and medical center in Scranton, Pa.

Biggest challenge:

The development of an OS/2 application that allows nurses to work with PC applications, as well as access data from a mainframe and VAX. "That was a very tough jump. We started with a small prototype, then realized we had to pass data from VAX to the PC LAN and from the mainframe to the LAN."

This practice resulted in a systems programming position at The Coca-Cola Co., and within 18 months he was supervising technical support for an IBM 3033. Eventually, he moved to his current job as a systems programmer at a large hospital and medical center in Scranton, Pa., and jumped on the PC bandwagon. When the medical center rumbled about downsizing, for instance, Johnston bought a PC and learned DOS, OS/2 and assembler on his own. When it began installing LANs, he volunteered for that project as well.

After less than four years, Johnston was in tune with the emerging heterogeneous environment. When the hospital wanted to build a prototype application that would pass data among Windows PCs, OS/2 workstations and CICS applications on the mainframe and the Digital Equipment Corp. VAX, only Johnston could build the application.

Although Johnston never earned a college degree, he says he never really missed it. "I would recommend young people learn NetWare first, and there's a lot there to learn," Johnston says. "Then I'd tell them to learn the interconnectivity parts of OS/2 and Windows. But most importantly, I'd tell them to jump on every opportunity they have to get more skills."

Panepinto is a free-lance writer in Amherst, Mass.

NASPA is an organization that helps information systems professionals move into the world of heterogeneous corporate computing. Traditional mainframers can share skill-building techniques and consultants about technological change. For more information, call (414) 423-3430.

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Qualified candidates should possess a Bachelor's degree in Computer Science with a minimum of two years direct experience specializing in PNMS III Data Administration, along with a working knowledge of PNMS III Application Generator and UNIX operating system. Knowledge of the following PC software is preferred: Microsoft Word, Excel, and Powerpoint for Windows.

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CONSULTANT (Ref. #86193) to consult with clients to ascertain & define their business reqs or problem areas & utilize tech expertise to provide solutions to clients' needs, incl analyzing, designing, developing & implementing comp s/ware for clients' EDP sys. Duties incl: enhancing & customizing the "WIN" (Universal Windows Credit Card Services Sys) incl redesign, development of its modules & integrated sys testing. Duties require using Sun4 Sparc Workstation, UNIX, ANSI C, C DEVGUIDE & DBXTOOL. ED & EXP: Bachelor's in Comp Sc, Engg, Sys Anal or Math & 2 yrs exp in the job offered or 2 yrs exp as Prog, Sys Prog, Prog/Anal, Sys Anal, S/ware Engg, Consultant or S/ware Specialist. Will accept 3 yrs of college ed plus 3 years of exp in the related occupation in lieu of the required ed & exp. REL EXP: must include in whole or in part s/ware development using SUN/UNIX Operating Sys & the following languages and/or s/ware: ANSI C, C, DEVGUIDE, & DBXTOOL. $47,000/yr. 40 hr/wk.

SYSTEMS ANALYST (Ref. #85993) to consult with clients to ascertain & define their business reqs or problem areas & utilize tech expertise to provide solutions to clients' needs, incl analyzing, designing, developing & implementing comp s/ware for clients' EDP sys. Duties incl: analysis, design, development & maintenance of a defined contribution record keeping & reimbursement sys for benefit plans. The responsibilities incl process flow & data flow design, integration of various modules, troubleshooting, tech support & meeting with business analyst & users to gather reqs. Tech support will be for design of apps using LINC II on Unisys A series using the following h/ware, s/ware & languages: Unisys A12/A17, COMS, DMS II, LINC 5 Level 14 & upwards, COBOL & WFL. ED & EXP: Bachelor's in Comp Sc, Engg, Sys Anal or Math & 2 yrs exp in the job offered or 2 yrs exp as Prog, Sys Prog, Prog/Anal, Sys Anal, S/ware Engg, Tech Consultant or Consultant. Will accept 3 yrs of college ed plus 3 yrs of exp in the job offered or in the related occupation in lieu of the req ed & exp. REL EXP: must include in whole or in part, app. s/ware development; designing program & data flow; troubleshooting & tech support, & using UNISYS A series, LINC #14 version, COBOL, COMS, & DMS II. $46,500/yr. 40 hr/wk.

SENIOR SYSTEMS ANALYST (Ref. #86093) to consult with clients to ascertain & define their business reqs or problem areas & utilize tech expertise to provide solutions to clients' needs, incl analyzing, designing, developing & implementing comp s/ware for clients' EDP sys. Duties incl: lead team of programmers in analysis, design, code, test & implementation stages of application sys development. The duties require the use of UNIX C, INFORMIX & 4GL-RDBMS. ED & EXP: Bachelor's in Comp Sc, Engg, Sys Anal or Math & 2 yrs exp in the job offered or 2 yrs exp as Prog, Sys Prog, Prog/Anal, Sys Anal, S/ware Engg, or Consultant. Will accept 3 yrs of college ed plus 3 yrs of exp in the related occupation in lieu of the required ed & exp. REL EXP: must include in whole or in part, s/ware development using UNIX, C & INFORMIX. $37,810/yr. 40 hr/wk.

SYSTEMS ANALYST (Ref. #74493) to consult with clients to ascertain & define their business reqs or problem areas & utilize tech expertise to provide solutions to clients' needs, incl analyzing, designing, developing & implementing comp s/ware for clients' EDP sys. Duties incl: analysis & enhancement of telephone billing sys. Integration, regression test of modules. Database administration, service order maintenance over data network with AIN (Advanced Intelligent Network), AP, BOSS for CRIS & BPP bills. Responsibilities incl Project tracking, tech support using IBM 3090, MVS/ESA, VM/XA/OV, SNA/VTAM, JCL, QMF, SQL, CICS 3.1, C, DB2 2.3, PL/I 2.3, VS COBOL II, IBM ASSEMBLER & MSWINDOWS, EXCEL on Ethernet & NCP/Netview environment. ED & EXP: Bachelor's in Comp Sc, Engg, Sys Anal or Math & 2 yrs exp in the job offered or 2 yrs exp as Prog, Sys Prog, Prog/Anal, Sys Anal, S/ware Engg, or Consultant. Will accept 3 yrs of college ed plus 3 yrs of exp in the related occupation in lieu of the req ed & exp. REL EXP: must include, in whole or in part, network design; sys admin., & using IBM 3090, MVS/ESA, VM/XA, SNA/VTAM, CICS, Ethernet, DB2, IBM Assembler & PL/I. $33,155/yr. 40 hr/wk.

SENIOR SOFTWARE CONSULTANT (Ref. #84893) to consult with clients to ascertain & define their business reqs or problem areas & utilize tech expertise to provide solutions to clients' needs, incl analyzing, designing, developing & implementing comp s/ware for clients' EDP sys. Duties incl: managing multiple large s/ware projects & ensuring the completion of the projects with very high quality, on schedule & within budget; proposal preparation, s/ware estimation, client presentations, planning; arriving to development methodology & milestone, defining deliverables for different milestones; arriving at payment schedules, work allocation; monitoring, tracking quality & costs; reliability modeling; managing changes, client liaison & expectation management of clients; motivating a team of highly skilled professionals; & interacting with multiple vendors to different sites to the same time. Duties require using IBM mainframes & DB2, CICS, COBOL II, TSO, REXX, SRPI & IMS DB/DC. ED & EXP: Bachelor's in Comp Sc, Engg, Sys Anal or Math & 2 yrs exp in the job offered or 2 yrs exp as Prog, Sys Prog, Prog/Anal, Sys Anal, S/ware Engg or Consultant. Will accept 3 yrs of college ed plus 3 yrs of exp in the job offered or in the related occupation in lieu of the req ed & exp. REL EXP: must include, in whole or in part, involvement in all stages of s/ware development cycle, project management for quality; schedules & cost, preparing proposals, defining programming objectives, conducting client presentations, maintaining client liaison, interacting with vendors, & using IBM mainframes, DB2, CICS, TSO & IMS DB/DC. $52,000/yr. 40 hr/wk.

SENIOR SOFTWARE CONSULTANT (Ref. #84793) to consult with clients to ascertain & define their business reqs or problem areas & utilize tech expertise to provide solutions to clients' needs, incl analyzing, designing, developing & implementing comp s/ware for clients' EDP sys. Duties incl: managing large APP S/ware Development projects. Responsibilities incl effort estimation, project planning, scheduling, management & provision of tech support to the development team, development & implementation of tech standards, guidelines, tools & procedures, reviewing tech design, carrying out performance anal & tuning, quality assurance, monitoring & control of project progress & reporting to corporate management. The development environment is an IBM mainframe with the following h/ware & s/ware: IBM 3090, MVS/ESA, COBOL II, DB2, CICS, EASYTRIEVE, CASE TOOL FOUNDATION (METHOD I, DESIGN I, INSTALL I) & MICROSOFT PROJECT. ED & EXP: Bachelor's in Comp Sc, Engg, Sys Anal or Math & 2 yrs exp in the job offered or 2 yrs exp as Prog, Sys Prog, Prog/Anal, Sys Anal, S/ware Engg, Consultant or Project Manager. Will accept 3 yrs of college ed plus 3 yrs of exp in the job offered or in the related occupation in lieu of the req ed & exp. Related exp must have incl in whole or in part, design & management of large s/ware app. development projects; project planning & scheduling; quality assurance providing tech guidance; developing project estimates; evaluating design for tech feasibility; & using IBM 3090 MVS, DB2, CICS, COBOL II, Microsoft Project & METHOD I. $80,000/yr. 40 hr/wk.

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FIELD REPORT: Docking Stations

By David Baum

The concept is great: A portable computer that goes anywhere and upoo return to the office, slips into a docking statioo with your favorite desktop peripherals and network connections already attached. No oeed to maintain two computers or worry about files and programs being in synch.

Typically, the goal of most users who seek docking stations is to integrate a portable computer into a cohesive desktop system, not just to provide a bigger monitor and keyboard, says Matt Ghourdjian, national director of technology at the law firm of Howrey & Simoo.

Apple Computer, Ioc., NEC Corp., Compaq Computer Corp. and a host of third-party veodors offer docking statioos that work with portables from these three vendors. After testing PC and Macintosh-compatible systems, the 750-persoo law firm standardized on Apple PowerBook Duo portable computers and a variety of docking stations from Apple and third-party vendors.

"The attorneys like the Duos because they are lightweight," Ghourdjian says. He insists that Apple's PowerBook Duo line and accompanying docking stations offer the best integratioo betweeo hardware and software.

"The PC vendors don't do this as well," be says. "There is no synergy between the operating system and the docking hardware. For instance, [with a PC] if you hit the eject key, you can lose whatever document you were working on. Also, there are no automount features like you have with the Apple" docking stations.

Makes traveling easy

Docking stations have caught oo at sites where osers are on the move such as Houstoo Community College in Texas, where the faculty travels among 46 different locations at six different colleges.

"Our faculty teaches at multiple sites on the same day," says Willie Pritchard, assistant vice ehancellor for instructional compoting. "We've established teaching bunkers in the main lecture halls with huilt-in docking stations. Teachers can walk in with a computer, slip it into the dock and power up a full multimedia system for presentations."

Ghourdjian says his favorite Duo-compatible dock is Etherdock from E-Machines, Inc. in Sunnyvale, Calif., because it is Ethernet-ready. However, it does not support an internal PowerBook modem or a dock-resident hard drive.

Lingering complaints

Despite the convenience, the price for a complete system is steep. After spending $1,500 to $2,000 for a portable computer, spending another $500 to $1,000 for the docking station may be hard to swallow. Some users say many docking station-compatible notebooks that favor light weight over functionality are flawed by the lack of an internal floppy drive.

Ghourdjian disagrees. "If you utilize the networking and communication tools, you'll almost oever need a floppy," he says. "For os, the extra weight isn't worth it." Yet users warn that not having a floppy drive ooboard can be disastrous if a critical program crashes when away from the dock. With no way to insert floppies, you cannot reboot the system.

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- A single computer for both mobile and office use.
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cons

- High cost of configuring a complete system.
- Lack of floppy drive in some portables.
- Poor integration between some docks and a portable's operating system.
- Incompatibility between docks and a portable's internal modem.

Baum is a free-lance writer in Santa Barbara, Calif., whospecializes in emerging technologies.

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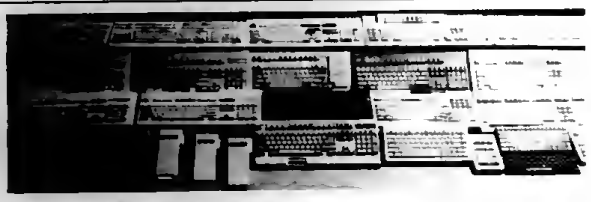

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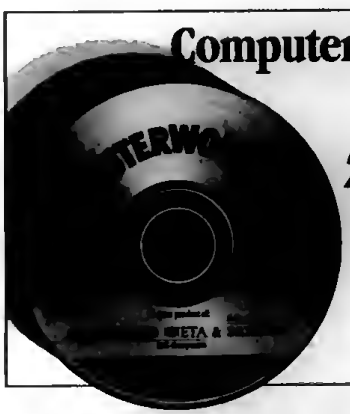

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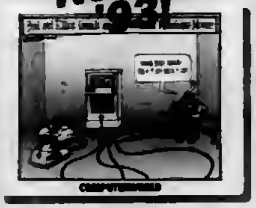

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Ardis	78
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Candle Corp.	126-127
Cisco	9
Command Technology	73
Communication Networks	125
Compaq Computer Corp.	96-98
Computer Associates	3
Computerworld on CD	86
CW Circulation	82, 88, 106-107
CW Classified	66, 71, 72, 78
CW Editorial Calendar	62
Cyrix	26-27
DataProducts	50
Dell	38
Digital Equipment Corp.	40-41
Eicon Technology	60
FTP Software	24
Hayes	22-23
IBM	48-49, 71, 77
IBM Personal Software Products	18-19
IDUG	42
Information Builders	17
Informix	57
Ingres	68-69
Innovation Data Processing	7
Lotus Development Corp.	43-45, 64-65
Micro Focus	11
Minolta	15
NCR	26-27
NEC	110-112
Oracle Corp.	5
Powersoft	47
Progress Software	102-103
Ross Systems	10
Sun Microsystems	84-85
Sybase, Inc.	13
Symantec	C3
Texas Instruments	74-75
Wang	25
WHITE PAPER	62/63*
Windows World Open	116
WordPerfect	29-31
Workstation Group	56
XcelleNet	83

* Regional only

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Companies in this issue

Page number refers to page on which story begins

3Com Corp. 131
20th Century Insurance Co. 124

A

Aberdeen Group 4,51
Advantage Data Systems 39
Aerospace Industry Association 100
Aetna Life and Casualty Co. 70
Amdahl Corp. 67
American Express Co. 1,15
American Greeting Corp. 99
American Management Systems, Inc. 73
Andersen Consulting 73,113
Annex Research, Inc. 67
Appintec Corp. 72
Apple Computer, Inc. 1,6,28,100,137
ARI Network Services 129
Arkwright Mutual Insurance Co. 7
ASK Group, Inc. 16,28,51
Associated Grocers, Inc. 113
AST Research, Inc. 145
AT&T 1,63,67,100
AT/Comm, Inc. 16
Atre, Inc. 76
Atrium Technologies, Inc. 28

B

Bachman Information Systems, Inc. 16
Bank of Boston Corp. 79
Bank of Montreal 51,53
Banc One Corp. 1
Banyan Systems, Inc. 1,12,63,113,146
Barnett Bank 10
BellSouth Corp. 70
Bergen Brunswig Corp. 114
Blue Cross/Blue Shield of Minnesota 10
Borland International, Inc. 76
Boston Edison Co. 4
BP Exploration, Inc. 145
Brainstorm Technologies, Inc. 51
Byer California 121
Bytex Corp. 61

C

Cambex Corp. 56
Cambridge Technology Partners, Inc. 91
Candle Corp. 71
Cap Gemini America, Inc. 1,119
Carrera Computer, Inc. 39
Charles Schwab & Co. 28,91
ChipSoft, Inc. 18
Citicorp. 1
Comcast Corp. 16
Compaq Computer Corp. 63,137
CompuServe, Inc. 56
Computer Associates International, Inc. 72,76
Computer Intelligence/InfoCorp 70
Computer Sciences Corp. 82,144
Computerland Corp. 117
Computervision Corp. 48
Concord Communications 4
Conseco Co. 61
Cooperative Solutions, Inc. 16
Cpac, Inc. 129
Cross Access Corp. 72
CSX Technologies, Inc. 67

D

Database Associates 145
Dataquest, Inc. 20,99,129,145
Dell Computer Corp. 145
DeskStation Technology, Inc. 39
Digital Equipment Corp. 6,7,12,18,39,51,53,56,76,99,119,120,122,146
Dimensional Insight, Inc. 56
Dun & Bradstreet Software 39
Dunkin Donuts, Inc. 113
Du Pont Co. 113

E

Edward D. Jones & Co. 118
Electronic Data Systems Corp. 67,70,144
Elf Aquitane 94
Eli Lilly & Co. 145
Ellery Systems, Inc. 53
E-Machines, Inc. 137
Employers Resource, Inc. 28
Entex Information Services, Inc. 6
Epsilon Data Management, Inc. 14
Ernst & Young 99
Extended Intelligence, Inc. 73
Exxon Corp. 145

F

Fel-Pro Inc. 76
FileNet Corp. 70
Filetek, Inc. 70
Financial Decision Systems, Inc. 46
Florida Power Corp. 61
Ford Motor Co. 19
Forrester Research, Inc. 117
Fujitsu Ltd. 81,94

G

Gartner Group, Inc. 1,7,12,67,117
Gary Smaby, Inc. 1
Gempins Card International Corp. 39
General Electric Co. 8,28
General Instruments Corp. 16
General Motors Corp. 1,144
Generic Software, Inc. 72
Great Plains Software, Inc. 39
GST Software 46
GTE Corp. 1
GTE Data Services, Inc. 73
Gupta Corp. 51
Gupta Technologies, Inc. 76

H

Hallmark Cards, Inc. 79,80
Hewlett-Packard Co. 4,6,7,8,28,46,39,53,67,91,113,117,119,120,145
Hitachi America Ltd. 70,94
Hitachi Data Systems Corp. 76
Hoechst Celanese Corp. 1
Home Savings of America 81
Hughes LAN Systems 16

I

IBM PC Co. 8
IBM 1,4,6,8,19,12,15,39,46,53,56,63,67,70,72,76,91,100,113,118,119,120,122,131
IDEAssociates, Inc. 72
InfoQuest 63
Information Builders, Inc. 51
Information Kinetics, Inc. 82
Informix Corp. 94
Informix Software, Inc. 28,51,113
Insignia Solutions, Inc. 78
Integrated Device Technology, Inc. 39
Intel Corp. 1,8,16,21,28,78,99,118
IntelligenceWare 46
International Data Corp. 94,100,123,145
Intex Solutions, Inc. 46
Intuit, Inc. 16
Iomega, Inc. 21
Isocor Corp. 56

J

J. J. Kenny Co. 51
J. P. Morgan Investment Services 119
JASA Corp. 124
JDC Corp. 94

K

Kaleida Labs, Inc. 1
Kansas City Southern Railway Co. 19
Kash 'n Karry Food Stores, Inc. 116
Kendall Square Research Corp. 8
KeyCorp. 99
KnowledgeWare, Inc. 73
Kroger Co. 81

L

LANcity Corp. 16
Legent Corp. 145
Lehman Brothers, Inc. 14,91
Lexmark International, Inc. 46
Lockheed Corp. 100
Lotus Development Corp. 20,21,46,51

M

MAI Systems Corp. 145
Martin Marietta Corp. 51
MCA Worldwide 100
McCaw Cellular Communications, Inc. 21
McDonald's Corp. 1
McDonnell Douglas Helicopter Co. 16
MCI Communications Corp. 21
McKesson Corp. 20
Memorex Telex N.V. 145
Merrill Lynch & Co. 70
Meta Group, Inc. 51,53,123,124
Metamor Technologies Ltd. 7
Microsoft Corp. 1,6,7,8,20,21,39,46,51,67,76,100,113,119,120,122,146
MiniStor Peripherals Corp. 46
Mips Technologies, Inc. 30
Mitsubishi Electronics of America 114
Modern Industries, Inc. 16
Montgomery Securities 4,51,73
Motorola, Inc. 1,28,39,145

N

NCR Corp. 1,8,18,67,117
NEC Corp. 94,137
NEC Technologies, Inc. 39
Nerco, Inc. 91
NetLabs, Inc. 4
Netpower, Inc. 39
Network Systems Corp. 61
New United Motors Manufacturing, Inc. 28
NewWorth, Inc. 81
Next Computer, Inc. 6,78
Novell, Inc. 1,8,51,61,63,91,99,100,119,121,131,146
NPRI, Inc. 81
Nynex Corp. 8

O

Oasis Group PLC 145
OCS Technologies, Inc. 24
Odyssey Development, Inc. 42
Olivetti North America, Inc. 46
Omicron Co. 116
Open Software Foundation 28,73,94,99,113,121
Oracle Corp. 19,28,51,73,94,99,113,119,145

R

Pacific Bell 70,100,121
Paramount Pictures Corp. 95
Patricia Seybold Group 51,53
PC Docs, Inc. 42
PenWare, Inc. 48
PeopleSoft, Inc. 39
Pepsi-Cola of North America 114
Perot Systems Corp. 129
Pharmacy Gold, Inc. 10
PHH Fleet America 95
Pitney Bowes, Inc. 70
Powersoft Corp. 51,76
Practice Corp. 117
Procter & Gamble Co. 99
Prudential Securities, Inc. 10,67

Q

Quaker Oats Co. 7

R

Radius Retail Ltd. 16
RAM Mobile Data 21
Raytheon Co. 76
Recognition International, Inc. 8
Revelation Technologies, Inc. 51
Reynolds Metals Co. 79
Richard A. Eisner & Co. 81
Rockwell International Corp. 91
Roll Systems 70
Ross Systems, Inc. 39

S

S. G. Warburg & Co. 4,145
Sallie Mae 6
Salomon Brothers, Inc. 70
Scientific-Atlanta, Inc. 1
Seitor Corp. 46
Search, Inc. 24
Sequent Computer Systems, Inc. 51,67
Sharp Electronics Corp. 46
Silicon Graphics, Inc. 1
SoftSolutions Technology Corp. 42
Software AG of North America, Inc. 67,73
Software Productivity Consortium 73
Spaulding Sports Worldwide 117
Star Electronics 146
Standard Insurance Co. 121
States Nitewear, Inc. 145
Storage Technology Corp. 67
Summit Strategies, Inc. 91
Sun Life Assurance Co. 61
Sun Microsystems, Inc. 6,8,28,67,91,113,118,119,121
SunSoft, Inc. 67,119
Sybase, Inc. 28,51,99,145
Synetics Corp. 51
Synoptics Systems, Inc. 61
Syntex Corp. 121

T

Taligent, Inc. 100
Tandem Computers, Inc. 99,146
TeamOne Systems, Inc. 145
Tech Data Corp. 81
Tele-Communications, Inc. 16
Teradata Corp. 1
Texas Instruments, Inc. 15,73
The Chase Manhattan Bank NA 113
The Coca-Cola Co. 131
The Dodge Group 39
The New York Times Co. 82
The Santa Cruz Operation 121
The Standish Group 100
The Travelers Corp. 123
The Viewpoint Group 28
Thinking Machines Corp. 14
Time Warner Entertainment 16
Times Mirror Cable Television 16
Tivoli Systems, Inc. 28
Transamerica Financial Services 1
Tritech 70
Turner Broadcasting System, Inc. 123

U

U.S. Bancorp 95
U.S. Air 10
UltraNetwork Technologies, Inc. 14
Uniface Corp. 16,28
Union Camp Corp. 121
United Missouri Bank 145
United Parcel Service, Inc. 61
Universal Studios 100
Unum Life Insurance Co. 123,124

V

Vetrotex Certained Corp. 56
VF Corp. 79,80
Visa International 81

W

Wallace Computer Services, Inc. 70
Wang Laboratories, Inc. 113
Waste Management of North America 51
Watcom International Corp. 76
Wellfleet Communications, Inc. 16,61
Windows User Group Network 1
WordPerfect Corp. 20,21,42
Workgroup Productivity Corp. 51,56
WorkGroup Technologies, Inc. 119
World Bank 123
World Software Corp. 42
Wyse Technology, Inc. 56

X

X/Open Co. 8,91,99,100,108
Xerox Corp. 70

Y

Young & Rubicam 91

Z

Zenith Electronics Corp. 16

Gainers Losers

Percent

Microcom Inc.	35.5	Kendall Square Research(L)	-52.2
Software Publishing Corp	32.7	VLSI Technology	27.2
Corel Corp.	27.4	Micro Focus(L)	22.3
Go Video	23.1	Wordstar	-14.3
Penril Data Comm Networks	21.6	Spinnaker Software	-13.1
CrossComm	19.8	Rainbow Technologies Inc.	-12.5
3COM Corp.	17.8	Policy Management Sys.	12.4
CE Software	16.0	Zeos International Ltd.	-12.1

Dollar

Cabletron Systems	13.25	Kendall Square Research(L)	-5.88
Matsushita Electronics	9.00	Micro Focus(L)	-4.38
Microsoft Corp	6.50	VLSI Technology	-3.88
3COM Corp.	6.50	Policy Management Sys.	-3.25
Wellfleet Communications(H)	5.25	ITT Corp	-3.00
Sybase Inc. (H)	5.00	IBM	-2.63
CrossComm	5.00	Rainbow Technologies Inc.	-2.63
DSC Communications	4.38	National Semiconductor	-1.88

Kendall Square Research continued its remarkable freefall after announcing drastic revenue restatements (see page 6).

[redacted]

Wall Street divided on EDS

The granddaddy of outsourcing firms, **Electronic Data Systems Corp.** (GME), owns more than one-third of the market. Recent events have divided analysts on the company's near-term stock performance, however.

James Kissane, an analyst at Salomon Brothers, Inc., said EDS is fundamentally solid and that its revenue will likely continue to grow. But he recently downgraded EDS shares from Buy to Hold, citing uncertainty created by the decision of EDS parent General Motors Corp. to contribute its GME shares to its U.S. Hourly Pension plan.

Also, EDS has had mixed results in recent jousts for big contracts. EDS lost the bidding in November for a 10-year, $1.3 billion contract with British Aerospace PLC. **Computer Sciences Corp.** (CSC) got the business instead. At the end of the month, though, EDS scored a 10-year, $2 billion contract with Inland Revenue, the UK's tax agency.

EDS received a Moderately Attractive rating in a Nov. 19 report from Donaldson, Lufkin & Jenrette Securities Corp. Analyst Mark Wolfenberger said EDS' fundamentals are more important than the pension plan and the British Aerospace contract loss. EDS has cut costs and should see revenue growth in the coming year, he said.

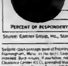
With the British Aerospace deal under its belt, EDS competitor CSC seems to enjoy good prospects. Equities firm Raymond James & Associates, Inc. recently gave CSC shares a Buy rating, estimating that the British Aerospace contract alone could buoy CSC's earnings per share by 20 cents annually. Raymond James analyst Jeffrey Newman said CSC should post a 19% rise in revenue in 1994.

—Derek Slater

Outsourcing giants

The 1993 outsourcing market is valued at $9.5 billion. EDS is still king of the hill, though competitors are gaining ground.

Market share (by 1993 revenue)



Percent of respondents

Source: Gartner Group, Inc., Stamford, Conn.

Exch	52-Week Range		Company	Dec. 3 3pm	Wk Net Change	Wk Pct Change
Communications and Network Services						UP [illegible]
OTC	43.00	19.63	3COM Corp	43.00	6.50	17.8
NYS	91.13	67.50	American Info Techs Corp	77.63	0.38	0.5
NYS	65.00	47.13	AT&T	54.38	1.50	2.7
OTC	4.44	0.94	Artel Communication Corp	3.25	0.00	0.0
OTC	24.50	12.50	Banyan Systems Inc.	24.50	2.00	8.9
NYS	69.13	67.38	Bell Atlantic Corp	61.00	2.00	3.6
NYS	63.88	69.00	BellSouth Corp	57.50	0.63	1.1
NYS	14.75	4.25	Bolt, Beranek & Newman	13.25	1.38	11.6
OTC	18.50	9.50	Brooktrout Technology	13.00	-0.75	5.5
NYS	119.00	70.75	Cabletron Systems	113.75	13.25	13.2
OTC	36.50	11.25	Centigram Communications	34.25	1.50	4.6
OTC	55.50	22.88	Chipcom Corp	50.00	3.63	7.8
OTC	60.50	34.38	Cisco Systems Inc	60.50	3.13	5.4
OTC	18.38	8.00	Compression Labs Inc	14.13	1.00	7.6
OTC	36.00	21.75	CrossComm	30.25	5.00	19.8
OTC	4.63	1.75	Data Switch Corp	1.75	-0.13	-6.7
NYS	19.88	12.38	Digital Comm. Assoc.	18.75	0.00	0.0
OTC	11.75	3.50	Digital Systems Int'l Inc	3.63	0.13	3.3
OTC	73.13	17.75	DSC Communications	62.13	4.38	7.6
OTC	9.50	4.75	Fibronics Int'l Inc	5.50	0.25	-4.3
OTC	23.00	8.75	FileNet Corp.	20.25	2.75	15.7
OTC	4.38	1.69	Gandalf Technologies Inc.	3.00	0.13	4.3
OTC	2.06	0.69	Gateway Communications	0.94	-0.06	-6.2
NYS	15.75	4.75	General DataComm Inds	19.13	0.13	1.3
ASE	3.63	2.00	Go Video	3.00	0.50	23.1
NYS	39.88	33.13	GTE Corp	36.88	0.50	1.3
NYS	94.75	69.00	ITT Corp	88.00	3.00	-3.3
OTC	29.88	18.63	MCI Communications Corp.	24.88	0.25	-1.0
OTC	6.50	1.50	Microcom Inc.	5.25	1.38	35.5
OTC	24.25	3.50	Netrix Corp	6.13	0.00	0.0
OTC	19.00	6.50	Network Computing Devices	6.75	-0.75	-10.0
NYS	11.50	5.38	Network Equipment Tech	9.88	0.00	0.0
OTC	20.13	8.00	Network General	14.75	1.50	11.3
OTC	14.00	6.88	Network Systems Corp	9.38	1.00	11.9
OTC	73.88	15.63	Newbridge Networks Corp	57.38	3.38	6.3
NYS	46.00	21.38	Northern Telecom Ltd	28.38	-1.25	-4.2
OTC	35.25	17.00	Novell Inc.	24.88	1.63	7.0
NYS	88.88	40.13	Nynex Corp	42.00	-1.00	-2.3
OTC	30.00	19.00	Octel Communications Corp	26.75	0.88	3.4
OTC	6.38	3.75	Penril Data Comm Networks	6.38	1.13	21.6
OTC	30.50	14.50	PictureTel Corp	20.75	1.00	5.1
OTC	11.50	3.63	Proteon Inc.	7.75	0.38	5.5
NYS	38.88	17.75	Scientific Atlanta Inc	33.63	1.75	5.5
NYS	47.00	34.19	Southwestern Bell Corp	42.75	1.13	2.7
NYS	40.25	24.38	Sprint Corp.	32.88	1.50	4.4
OTC	27.00	12.50	Standard Microsystems Corp	24.75	1.25	5.3
OTC	19.75	10.00	Stratacom Inc	17.63	0.63	3.7
OTC	42.75	20.00	SynOptics Communications	26.75	-0.63	2.3
OTC	9.88	2.88	Telebit Corp	7.63	0.88	13.0
OTC	17.88	5.13	Telematics Int'l Inc	15.63	0.25	1.6
OTC	35.25	17.00	US Robotics	26.00	-1.25	-4.6
NYS	50.75	37.75	US West Inc	46.88	0.50	1.1
OTC	64.00	20.50	Wellfleet Communications (H)	64.00	5.25	8.9
OTC	19.50	7.25	Xircom	15.63	0.63	4.2
PCs and Workstations						UP [illegible]
OTC	5.56	2.50	Advanced Logic Research	3.50	0.00	0.0
OTC	65.25	22.00	Apple Computer Inc.	31.50	-1.13	-3.4
OTC	25.50	12.75	AST Research Inc (H)	24.50	0.63	2.6
NYS	8.63	2.50	Commodore Int'l	3.38	-0.38	-10.0
NYS	73.63	41.75	Compaq Computer Corp (H)	73.63	3.50	5.0
OTC	49.88	13.50	Dell Computer Corp	28.00	3.63	14.9
NYS	89.25	63.38	Hewlett Packard Co	76.63	2.38	3.2
NYS	46.75	23.50	Silicon Graphics	44.75	1.38	3.2
OTC	41.00	21.13	Sun Microsystems Inc.	27.75	0.88	3.3
NYS	48.00	24.63	Tandy Corp.	46.50	0.13	0.3
OTC	7.00	2.50	Zeos International Ltd.	3.63	-0.50	-12.1
Large Systems						OFF [illegible]
ASE	8.50	4.38	Amdahl Corp.	5.50	-0.13	2.2
NYS	8.75	3.63	Convex Computer	5.50	0.00	0.0
OTC	5.13	2.25	Cray Computer	2.50	0.13	-4.8
NYS	30.88	20.38	Cray Research Inc.	27.00	0.63	2.4
NYS	13.88	7.75	Data General Corp	9.75	0.13	1.3
NYS	49.25	30.38	Digital Equipment Corp	36.25	1.00	-2.7
NYS	47.38	32.50	Harris Corp	46.25	1.38	3.1
NYS	67.38	60.63	IBM	53.38	-2.63	-4.7
OTC	25.75	5.38	Kendall Square Research (L)	5.38	5.88	52.2
NYS	141.50	87.00	Matsushita Electronics	132.00	9.00	7.3
OTC	23.75	12.75	NetFrame	16.13	-0.13	0.8
OTC	26.00	9.25	Parallan Computer	14.75	-0.38	-2.5
OTC	23.25	8.50	Pyramid Technology	14.50	1.00	6.5
OTC	24.00	11.25	Sequent Computer Sys.	16.50	0.25	1.5
OTC	6.00	1.38	Sequoia Systems Inc	4.44	-0.19	-4.0
NYS	41.25	20.25	Stratus Computer Inc	27.75	0.38	1.4
NYS	16.88	8.50	Tandem Computers Inc	10.38	-0.13	-1.2
OTC	27.50	10.63	TriCord Systems	27.50	3.25	13.4
NYS	13.88	9.63	Unisys Corp	11.88	0.38	3.3
Software						UP [illegible]
OTC	37.00	14.50	Adobe Systems Inc	24.38	1.00	4.3
OTC	25.25	11.75	Aldus Corp	24.75	1.75	7.6
OTC	9.25	3.50	American Software Inc	6.38	0.25	4.1
OTC	28.13	9.50	ASP Computer Systems	15.00	1.00	7.1
OTC	56.75	37.00	Autodesk Inc.	45.25	1.50	3.4
OTC	6.75	2.38	Bachman Info. Systems	2.75	0.00	0.0
OTC	42.00	24.00	BGS Systems Inc.	27.00	0.00	0.0
OTC	84.13	38.75	BMC Software Inc	50.25	2.50	5.2
OTC	28.25	20.38	Boole & Babbage	26.00	0.00	0.0
OTC	27.25	12.75	Borland Int'l Inc	16.13	0.00	0.0
OTC	4.63	2.75	CE Software	3.63	0.50	16.0
ASE	60.25	16.41	Cheyenne Software Inc	33.50	2.13	6.8
OTC	19.50	8.25	ChipSoft	17.75	0.75	4.4
OTC	10.50	5.63	Cognos Inc	8.50	-0.50	-5.6
NYS	44.25	17.63	Computer Associates	41.38	-0.13	-0.3
NYS	6.50	2.13	Computervision Corp	3.13	0.13	4.2
OTC	34.25	19.75	Compuware Corp	25.00	-0.25	-1.0
OTC	14.25	5.75	Comshare Inc.	9.50	0.00	0.0
OTC	19.75	5.38	Corel Corp	19.75	4.25	27.4
OTC	15.25	3.63	Easel Corp (L)	4.75	0.25	6.3
OTC	75.25	15.75	4th Dimension	20.13	-0.13	-0.6
OTC	19.75	5.25	Frame Technology	10.00	0.25	2.8
OTC	17.50	8.00	Group 1 Software	8.75	-0.75	-2.8
OTC	35.25	11.50	Gupta (L)	15.00	0.00	0.0
OTC	12.00	4.88	Hogan Systems Inc	10.63	0.50	4.9
OTC	27.75	11.25	IMRS	22.50	0.00	0.0
OTC	44.75	27.00	Information Resources	37.13	1.13	3.1
OTC	27.25	13.38	Informix Corp	19.13	1.50	8.5
OTC	14.00	8.50	Intergraph Corp	10.13	0.38	3.8
OTC	13.63	4.88	Interleaf Inc	7.25	-0.25	-3.3
OTC	15.25	4.75	Intersolv Inc	10.25	1.00	10.8
OTC	18.75	7.75	KnowledgeWare Inc	17.25	1.75	11.3
OTC	54.75	15.50	Legent Corp	23.50	-0.13	-0.5
OTC	50.75	18.75	Lotus Development	50.25	3.00	6.3
OTC	23.00	4.75	MathSoft	6.50	0.13	2.0
OTC	20.50	4.50	McAfee Associates	6.25	-0.38	-5.7
OTC	11.63	3.75	Meca Software	6.38	0.00	0.0
OTC	14.75	7.63	Mentor Graphics (H)	14.75	1.25	9.3
OTC	46.00	15.25	Micro Focus (L)	15.25	-4.38	-22.3
OTC	13.25	4.38	Micrografx Inc.	7.88	0.50	6.8
OTC	98.00	70.38	Microsoft Corp.	85.38	6.50	8.2
OTC	34.63	9.44	Oracle Corp.	34.63	2.75	8.6
OTC	44.75	22.50	Parametric Technology	40.75	0.63	1.6
OTC	80.50	23.50	PeopleSoft	31.00	1.75	6.0
OTC	7.13	3.50	Phoenix Technologies	4.00	0.00	0.0
OTC	40.00	22.00	Powersoft	38.88	3.38	9.5
OTC	39.75	13.50	Platinum Software	22.75	-1.00	-4.2
OTC	25.00	7.25	Platinum Technology	10.00	0.13	1.3
OTC	63.50	32.25	Progress Software Corp.	49.50	1.00	2.1
OTC	8.63	1.94	Quarterdeck Office Sys.	2.19	-0.06	-2.8
OTC	32.00	16.00	Rainbow Technologies Inc.	18.38	-2.63	-12.5
OTC	13.38	4.25	RasterOps	8.00	0.38	4.9
OTC	15.25	6.50	Ross Systems	8.00	-0.25	-3.0
OTC	28.75	17.25	Sapiens Intl. Corp. N.V.	21.75	-0.50	-2.2
OTC	14.50	5.50	Software Publishing Corp.	8.13	2.00	32.7
OTC	17.75	5.25	Software Toolworks Inc.	11.88	-0.75	5.9
OTC	2.88	9.75	Spinnaker Software	2.06	-0.31	13.1
OTC	13.75	6.75	State of the Art	7.75	0.00	0.0
NYS	33.63	17.63	Sterling Software Inc.	28.88	2.00	7.4
OTC	21.63	9.63	Struct. Dynamics Research	19.50	1.75	9.9
OTC	61.75	20.88	Sybase Inc. (H)	41.75	5.00	13.6
OTC	20.50	9.25	Symantec Corp	17.88	1.38	8.3
OTC	25.50	10.88	System Software Assoc.	15.25	0.50	3.4
OTC	6.50	2.75	Trinzic Corp.	5.38	0.25	4.9
OTC	26.50	13.50	ViewLogic Systems	21.75	1.50	-6.5
OTC	22.50	5.50	Walker Interactive Systems	9.75	1.00	11.4
OTC	3.19	0.84	Wordstar	1.13	-0.19	-14.3
Semiconductors						OFF [illegible]
NYS	32.88	15.88	Advanced Micro Devices	18.63	-0.50	-2.6
NYS	28.00	14.38	Analog Devices Inc.	23.50	-0.13	0.5
OTC	38.63	14.75	Atmel Corp	27.25	1.75	6.8
OTC	6.88	2.75	Chips and Technologies (H)	6.25	-0.38	-5.7
OTC	39.75	13.00	Cirrus Logic	30.00	1.38	4.8
NYS	16.75	8.63	Cypress Semiconductor Corp.	12.63	-0.63	-4.7
NYS	19.00	11.75	Dallas Semiconductor	13.63	-0.38	2.7
OTC	74.50	38.25	Intel Corp	63.75	3.00	5.0
NYS	19.25	10.00	LSI Logic Corp.	13.88	-1.38	-9.0
OTC	26.75	12.25	Lattice Semiconductor	18.75	0.15	0.9
NYS	83.63	18.25	Micron Technology	48.25	2.25	4.9
NYS	107.50	48.75	Motorola Inc	96.38	0.25	0.3
NYS	21.75	10.13	National Semiconductor	19.38	1.88	-10.9
OTC	15.50	6.50	Sierra Semiconductor	8.38	0.13	-1.5
OTC	52.75	25.75	SynOpsys	46.13	-1.00	-2.1
NYS	84.25	45.13	Texas Instruments	63.83	-0.75	-1.2
OTC	18.88	6.38	VLSI Technology	10.38	-3.88	-27.2
OTC	14.38	4.88	Weitek	8.88	-0.75	-7.8
ASE	10.75	3.63	Western Digital Corp.	9.88	0.38	3.9
OTC	54.50	20.75	Xilinx	42.50	0.50	1.2
OTC	88.75	19.00	Zilog Inc	28.00	0.75	-2.6
Peripherals and Subsystems						UP [illegible]
OTC	24.75	10.50	American Power Conversion	19.00	0.00	0.0
OTC	22.75	15.50	Banctec Inc	22.63	1.63	7.7
OTC	17.00	3.50	Cambex Corp	4.75	-0.25	-5.0
ASE	18.38	3.88	Cognitronics Corp	5.13	0.31	6.5
NYS	25.50	9.00	Conner Peripherals	14.38	1.00	7.5
OTC	38.50	17.50	Creative Technologies Inc	27.25	1.25	4.8
OTC	30.75	6.50	Data Race Inc.	9.75	-0.25	-2.5
ASE	12.50	7.50	Dataram Corp.	9.50	0.00	0.0
NYS	39.00	9.25	EMC Corp	34.50	2.13	6.6
OTC	10.50	5.25	Emulex Corp.	6.25	0.13	2.0
OTC	20.00	14.00	Evans & Sutherland	17.50	0.25	1.4
OTC	20.00	7.50	Exabyte	17.63	1.75	11.0
OTC	34.00	12.38	Intelligent Info. Systems	25.00	-1.75	-6.5
OTC	8.25	2.50	Iomega Corp	3.25	-0.13	3.7
OTC	13.50	5.75	IPL Systems Inc	7.75	0.50	6.9
OTC	24.00	13.75	Komag Inc	16.00	0.50	3.2
OTC	19.50	4.38	Maxtor Corp.	6.25	0.00	0.0
OTC	10.00	5.25	Micropolis Corp	8.00	0.75	10.3
NYS	117.00	97.25	3M Corp	108.38	0.50	0.5
OTC	8.00	4.00	Printronix Inc	7.25	0.00	0.0
NYS	17.25	7.50	QMS Inc	10.38	0.00	0.0
OTC	17.88	9.38	Quantum Corp	14.75	0.88	8.3
OTC	9.00	3.13	Radius Inc (H)	9.00	0.88	10.8
NYS	17.75	11.75	Recognition Equipment	16.38	0.00	0.0
OTC	12.75	3.63	Rexon Inc.	4.38	0.38	9.4
OTC	25.13	13.13	Seagate Technology	24.13	0.63	2.7
NYS	45.00	18.00	Storage Technology	32.00	3.50	12.3
NYS	27.88	17.63	Tektronix Inc	21.88	0.38	1.7
NYS	88.88	69.88	Xerox Corp	82.13	-0.50	-0.6
Services						UP [illegible]
NYS	4.38	1.63	Allerion Inc	3.88	0.50	14.8
OTC	23.75	14.88	American Mgmt. Systems	20.00	-0.25	-1.2
NYS	4.75	2.38	Anacomp Inc	3.75	0.00	0.0
OTC	21.84	14.84	Analysts Int'l	18.38	1.25	7.3
NYS	56.50	46.88	Auto Data Processing	55.13	-0.25	-0.5
NYS	19.88	13.00	Ceridian Corp	18.25	0.00	0.0
NYS	21.00	13.13	Comdisco Inc	19.50	0.75	4.0
OTC	13.38	6.00	Computer Horizons	12.19	-0.13	-1.0
NYS	100.25	70.00	Computer Sciences	97.50	0.88	0.9
NYS	9.00	6.00	Computer Task Group	6.88	0.25	3.8
NYS	37.00	19.00	CompUSA Inc.	27.00	0.63	2.4
OTC	14.13	8.25	Control Data Systems Inc.	10.13	0.88	9.5
OTC	16.00	7.00	Corporate Software	14.88	0.00	0.0
OTC	11.75	6.63	Egghead Discount Software	9.00	0.50	5.9
NYS	35.88	26.00	General Motors E (EDS)	28.38	-0.50	-1.7
OTC	25.50	13.75	Inacom Corp	17.00	0.00	0.0
OTC	27.63	10.75	Intelligent Electronics (H)	26.00	-0.50	1.9
OTC	17.00	9.63	Medisel	14.63	0.25	1.7
OTC	37.00	7.00	Microage Inc.	35.75	1.50	4.4
OTC	37.75	21.50	Paychex	32.75	-0.13	-0.4
NYS	87.25	21.63	Policy Management Sys.	23.00	-3.25	12.4
NYS	44.25	24.13	Reynolds and Reynolds	[illegible]	2.50	6.0
OTC	24.75	13.38	SEI Corp (H)	26.50	1.75	7.7
OTC	26.00	17.50	Shared Medical Systems	22.50	0.13	0.6
OTC	12.63	5.75	SHL Systemhouse	6.63	-0.50	-7.0
OTC	30.75	20.00	Software Spectrum Inc.	23.00	2.25	10.8
OTC	62.75	27.75	SunGard Data Systems	35.13	-0.63	-1.7

Key: (H) = New annual high reached in period (L) = New annual low reached in period

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Briefs

Legent looking to buy

Legent Corp. plans to buy TeamOne Systems, Inc. in Sunnyvale, Calif., a developer of configuration management software for Unix workstations. The purchase will be a pooling of interests. Legent expects to finalize the transaction in early 1994.

TeamOne's technology will be blended into Legent's Endevor change management product line and will also be used to provide a key deliverable for Legent's recently announced XPE client/server initiative.

MAI exits Chapter 11

MAI Systems Corp. in Irvine, Calif., said it has emerged from Chapter 11 proceedings with a "positive cash flow, a minimum debt load and strong earnings potential." The reorganized company will provide unsecured creditors with stock. MAI's net income for the third quarter, ended Sept. 30, was $2.3 million compared with a loss of $169.6 million in the same period last year.

Total revenue for the quarter just ended was $18.9 million, a decline of 72% from the comparable period in 1992. This drop was mostly attributed to the elimination of MAI's European subsidiaries.

HP closes PC plants

Hewlett-Packard Co. told analysts last week it has shattered seven of its 10 PC manufacturing plants in the last 18 months, including all of its U.S. sites. HP said it retained a "high percentage" of the employees from those plants.

SHORT TAKES Memorex Telex N.V. said its three major creditor groups are supporting its Chapter 11 restructuring plan. ... Darrell Miller, Novell's executive vice president, corporate marketing and strategy, said he will offically retire Dec. 9, and plans to consult with venture capitalists.

Dour Dell seeks portable panacea

By Michael Fitzgerald

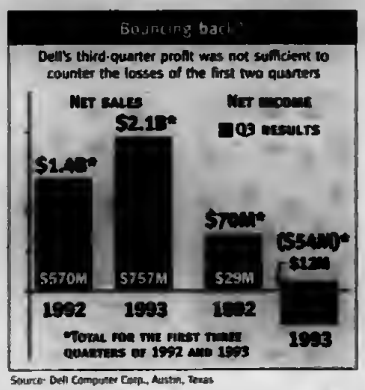
Despite a return to profitability, Dell Computer Corp.'s normally effusive executives ate humble pie last week, forecasting a fourth quarter that will not match last year's.

At the same time, Dell is gearing up for renewed growth in 1994, in part through a rebirth in the notebook market.

Dell posted a $12 million profit on record revenue of $757 million in its fiscal third quarter, up from $570 million a year ago and a solid 8% increase over its second-quarter revenue.

While profits fell to less than half of the $28 million posted in last year's third quarter, the stock market reacted positively, bumping Dell's stock up three points. The PC maker had been expected to break even at best.

However, Dell followed up by issuing a dour forecast, cautioning analysts that fourth-quarter profits will likely fall short of last year's $30 million, though sales should rise from last year's fourth-quarter total of $615 million. Dell also said it will not hit its goal of $3 billion in sales for the fiscal year. Its sales totaled just over $2 billion in the last fiscal year.



Source: Dell Computer Corp., Austin, Texas

Lack of a portable hurts

Dell surprised analysts with solid unit growth in the desktop market, but its lack of notebooks hurt its third-quarter sales performance and is blamed for the projected slip.

Still, analysts said they were impressed with the company's ability to grow revenue 8% despite its absence from the portable sector.

In a recent interview, Joel Kocher, Dell's president of sales, promised "a fairly broad range of products" for 1994.

Sources confirmed a published report that Dell will relabel AST Research, Inc.'s Bravo notebook line in a deal expected to be announced in the first quarter of 1994. The company also expects to add at least one upcoming Motorola, Inc. wireless handheld to its product catalog. And, in mid-1994, Dell-designed notebooks — the company's first 486s — are expected to appear.

Industry sources said Dell is discussing a wide range of features for its notebook line, including a built-in answering machine, extensive multimedia features, local-bus video and built-in global positioning software, among other things. Analysts said Dell's experience with build-to-order systems could be an advantage in pushing sophisticated portables.

While the AST OEM deal is a stopgap measure until Dell's own products appear, Bruce Stephen, an analyst at International Data Corp. in Framingham, Mass., said, "They'll be coming from behind the curve, but if they can come out with something innovative," the notebook market will be open to them. Stephen said the rumored Dell notebook direction is innovative, but depends on when the company delivers the products.

Michael Stonecipher, office systems manager at United Missouri Bank in Kansas City, said, "The opportunity for Dell is that [notebook] form factors keep changing so quickly, so by default they'll get an evaluation if they're in the market for the next generation."

Stephen Ades, director of information systems at States Nitewear, Inc. in New Bedford, Mass., said that while he is "not thrilled" with the AST box, he is "glad" to see Dell coming back into the market.

Kocher also said the Austin, Texas, PC maker has fixed the infrastructure and systems problems that caused it to lose track of inventory. He pointed to Dell's year-long focus on beefing up its systems staff, including the hiring of a chief information officer and several people who will focus on better integrating Dell's business and systems.

Moreover, analysts said Dell appears to have contained its cost of goods sold, suggesting it has addressed its structural issues.

Kocher said Dell, currently among the Top 5 PC makers in the U.S., is poised to grow rapidly in 1994. "The Top 5 only own 35% of the market — 700 no-names own the rest of it," Kocher said. "The big will get bigger" next year.

Sybase finds an Oasis

By Kim S. Nash

Sybase, Inc. last week said it plans to acquire Oasis Group PLC, a $16 million business process re-engineering firm based in the UK.

The deal, valued at $21 million, would add consulting services aimed at nontechnical senior managers to Sybase's collection of technical trainers, systems integration partners and other client/server advice-givers, the Emeryville, Calif., database vendor said.

As client/server computing becomes mainstream, users will need to plan for it on a corporate level, rather than project by project, analysts said. "Sybase needs to strengthen its consulting side to go beyond solving individual technology problems," said Dan Richards, an analyst at Database Associates in Morgan Hill, Calif.

Oasis provides Sybase with an entree into business process re-engineering with the Oasis Methodology, according to David Peterschmidt, vice president and general manager of worldwide field operations at Sybase.

The Oasis way

Oasis Methodology is a set of guidelines for analyzing and revamping core business tasks such as billing, customer service and order-filling. About 70% of Oasis Methodology can be applied to any industry, while the other 30% must be customized for specific users, said David Stanley, Oasis cofounder.

By happenstance, Exxon Corp.'s Chemical Polymers Europe division and BP Exploration, Inc., are among several joint Sybase and Oasis customers. For the next year, Sybase plans to gradually introduce Oasis consulting to existing Sybase users interested in rebuilding business processes.

Rival Oracle Corp. beefed up its consulting arm by introducing Oracle Industries five months ago [CW, July 19]. The vertical market-oriented service provides consulting and prefabricated application templates based on the Oracle database.

Sybase officials claimed that Oasis goes beyond Oracle's offering by reaching out to senior executive suites at user sites. "We deal in high-level discussions of how business works and doesn't work, without touching on specific technical issues until much further down the line," Stanley said.

The acquisition is expected to be approved by shareholders and government agencies next month.

Oasis Group PLC
Maidenhead, England

Founded: 1986.
Focus: Pure consulting firm for business re-engineering; sells no software or hardware of its own.
1992 sales: $16 million.
Employees: 100.
Customers: Multinational firms, primarily based in the UK, including S. G. Warburg & Co., BP Exploration, British Coal Corp., Eli Lilly & Co.
Sybase gains: High-level consulting services.

Wysiwyg

It's only NATURAL

Dallas-based software maker Intellection has a family of intelligent planning and scheduling software it calls **Rhythm**. (We're guessing it's a big family.)

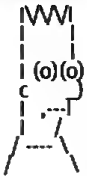
GREAT NAMES

Col. Gary Case
Program director for the Pentagon's $400 million integrated computer-aided software engineering (I-CASE) contract to the U.S. Air Force.

Dear Mr. President

Computer Museum visitors in Boston can send an electronic message directly to the White House via the Internet. Computer animation simulates the message as it bounces from the museum to a gateway in Boston to Washington and finally to the White House. President Clinton says he hopes to answer the messages within a year.

ASCII ART



HACKER LINGO

Bagbiter *n.*: Something, such as a program or computer, that fails to work or works in a remarkably clumsy manner. Example: This text editor won't let me make a file with a line longer than 80 characters. What a bagbiter!

Glork *interj.*: Term of mild surprise, usually tinged with outrage, as when one attempts to save the results of two hours of editing and finds the system has just crashed.

Source: The New Hacker's Dictionary (MIT Press)

What would be your idea of a dream merger between vendors and why? Contact Lory Zottola Dix at 1 (800) 343-6474, LDIX (MCI Mail); or 76537,2413 (CompuServe).
If we use your suggestion, we'll send you a gift.

The 5th Wave *by* Rich Tennant

Inside Lines

Unstacking the code

Microsoft late last week informed DOS 6.2 users via CompuServe that they may need a patch from Stac Electronics if they intend to use the operating system with the latest version of Stacker. Microsoft claims that Stac slipstreamed some changes into Stacker 3.11 that have caused various "incompatibilities" between the two products. Users need to run the patch, which can be found in Stac's forum, before installing MS-DOS 6.2. If Version 6.2 has already been installed, users must uninstall it, run the patch and then reinstall DOS. The vendors are involved in litigation.

Scaling, scaling over the DBMS sea

This week Microsoft is expected to show attendees at Database World in Chicago a version of its SQL Server for Windows NT database running on Digital's Alpha, according to sources close to both firms. The product will ship by month's end, the sources said. A 64-bit Alpha release of SQL Server will help prove that the database is scalable and portable, according to Dennis Schneider, president of OnPoint Marketing, a Nashua, N.H., consulting firm.

Getting a handle on Unix

Novell is preparing to roll out the services that will allow its UnixWare systems to be managed along with NetWare via its NetWare Management System (NMS), according to product line manager Steve Dauber. The services to be rolled out to UnixWare in the "fairly near term" include inventory management and software distribution, Dauber said. The recently shipped NMS 2.0 already monitors traffic generated by UnixWare systems through its LANalyzer NetWare Loadable Module, which can analyze TCP/IP packets, he added.

Ties that bind

When it comes to integrating Banyan's Enterprise Network Services (ENS) with Microsoft's Windows NT, the question is not whether but how, according to Banyan Vice President Bill Johnson. Definitely in the works is an NT redirector that will put NT clients on an ENS server. Less clear is whether Banyan will implement its global services on an NT platform, as it is doing for various Unix systems; or integrate ENS services with Microsoft's LAN Manager, as it did with NetWare; or even support Microsoft's future global services, a la Cairo. Stay tuned, Johnson says.

Avoiding LAN mines

Tandem Computers and its Ungermann-Bass subsidiary are expected this week to disclose that they will ship a set of fault-tolerant LAN products in the first quarter of next year. The NonStop Access for Networking series was designed to nearly double the uptime of LANs running DOS, Windows and OS/2 PCs through the use of dual-port LAN adapters and dual hub controller cards. The MasterLAN FT dual-port Ethernet adapter card, priced at $199, can be added to LANs of any brand. A complete system, including hub controller cards and host-based LAN controllers, costs $650 per workstation.

Even Digital employees seem a bit uncertain over when it's OK to use the now-discredited DEC acronym. Last week's press release on Digital's object technology agreement with Microsoft made reference to the Digital OSF/1 operating system (see story page 6). But a spokesman for the company's Unix operations said that at least for now, the name is still DEC OSF/1; he surmised that the press release reflected an overly zealous reading of the corporate campaign to sweep the DECs clean. Digital does eventually want to change the name of DEC OSF/1 to include the word "Unix," provided licensing terms from new keeper-of-the-Unix brand X/Open Co. are not onerous; but the spokesman said a switch to a new moniker is not imminent. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-5931 or 76537,2413, respectively. Or try Computerworld's 24-hour voice-mail tip line at (508) 820-8555.

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